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THE URINARY EXCRETION OF SILICA BY PERSONS EXPOSED TO SILICA DUST

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It has been demonstrated by numerous researches that silicosis is caused by the inhalation of silica dust. Not only has an excessive amount of silicosis been found associated with an exposure to such dust, but autopsy material has furnished additional proof, in that it has been possible to recover excessive amounts of silica in the ash of the lungs of silicotic persons. More recently, King (*1*) has demonstrated, as a result of his work on the metabolism of silica, that the urinary excretion of silica is at a higher level in persons exposed to silica dust than in normal individuals. King says, in part: "In the case of human beings it is probable that large numbers of extremely fine particles, smaller even than the very fine particles observable under the microscope in the lungs of individuals exposed to a dusty atmosphere, are constantly finding their way into the lung. In contact with the fluid in the lung these smallest of particles may suffer rapid solution, the larger particles slower and only partial solution. In this way there may be constant drainage of silica from the lung, the dissolved silica being carried away by the blood to be excreted in the urine."

The present brief study was undertaken for the purpose of obtaining further evidence that the lung changes associated with the inhalation of dust in the anthracite coal industry are caused by an exposure to both coal and silica dust. In a recent study of the health of workers in the anthracite coal industry (*2*) conducted by the Office of Industrial Hygiene and Sanitation of the Public Health Service, it was found that the workers were subjected to the inhalation of dust varying in total silica content from 11 to 63 percent, and in quartz content ranging from 4 to 43 percent. Pathological studies of some of these workers showed their lungs to contain silica and carbonaceous material in excess of the amounts present in

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normal lungs. All the evidence gathered seemed to point to the fact that the condition found among these workers may be attributed in part to the silica dust to which they were exposed; and as a result of these findings this condition in the anthracite workers was termed "anthraco-silicosis." It was felt, therefore, that the recovery of excessive amounts of silica in the urine of these mine workers, whose silica dust exposure had been established in a quantitative manner, would furnish further proof of the abnormal intake of silica dust.

PLAN OF STUDY

The present study was conducted on a group of men whose exposure had been previously evaluated as to the composition, size, and quantity of dust, and whose years of trade life were also known. Table 1 shows the distribution of the men in the different occupations entailing varying degrees of exposure to silica dust in the mines studied.

TABLE 1.—*Distribution of mine workers examined for urinary silica excretion*

Occupational group	Number of men	Silica dust exposure, percent	
		Total silica	Quartz
Miners	36	11.1	3.1
Rock workers	24	63.2	35.2
Inside transportation men	20	33.7	13.0
Outside workers	23	13.5	4.3
Former miners	20	11.1	3.1
Total	123		

Urine specimens were collected in most cases in 2-quart capacity cans and were immediately analyzed for silica at the mines by the method described by King and Dolan (*1*). Of the 123 samples obtained, 73 (59 percent) were 24-hour specimens. Specific gravity, albumin, and sugar were included in the analysis.

RESULTS OF STUDY

The silica content of the urine in milligrams per 100 cc varied from 0.6 to 11.7 and averaged 2.5. Urine specimens of 11 laboratory and office workers were analyzed for control purposes and showed an average silica content of 1.0 milligram per 100 cc. These findings are in agreement with those reported by King and Dolan. Through the courtesy of Assistant Sanitary Engineer J. M. DallaValle, of this Office, it was possible to examine 20 specimens of urine from steel-foundry workers. The results of these analyses showed the foundry workers to be excreting an average of 2.6 milligrams of silica per 100 cc. The specific gravity determinations showed no relationship to the silica

content of the urine. This result is also in agreement with King's work on the excretion of silica by gold miners.

In the study of the health of anthracite coal workers it had been possible to obtain excellent correlations between clinical findings and the composition and amount of dust, together with the years of exposure, when the latter three factors were expressed in one term; namely, silica particles-years. Consequently, a similar procedure was used in an attempt to determine the relationship between the total silica dust exposure and the amount of urinary silica. The results of such an analysis are presented in table 2.

TABLE 2.—*The relationship between the silica dust exposure of anthracite coal workers and urinary silica*

Exposure in millions of silica-dust particles-years	Milligrams of silica excreted per 100 cc of urine										Average silica excretion per 100 cc urine
	Number of persons in each group					Percent of persons in each group					
	Less than 1.0	1–1.9	2–2.9	3 or more	Total	Less than 1.0	1–1.9	2–2.9	3 or more	Total	
Less than 500	14	22	12	8	56	25	39	21	15	100	1.7
500–999	1	2	7	4	14	7	14	50	29	100	2.9
1,000–1,999	2	6	0	9	17	12	35	0	53	100	3.4
2,000 or more	0	6	3	7	16	0	38	19	43	100	3.6

It appears from these results that there is a definite relationship between the amount of silica dust inhaled over a period of years and the urinary silica found in the workers. The actual correlation is 0.48, and the probable error 0.04. It is interesting to note that aside from the gradual increase in urinary silica with an increase in exposure, as shown in the last column, no person with an exposure to more than 2,000 million silica dust particles-years was excreting less than the amount of silica found in normal persons (1.0 milligrams per 100 cc of urine), and that 62 percent of the workers in this group were excreting silica in excess of 2.0 milligrams per 100 cc. On the other hand, 64 percent of the persons with an exposure to less than 500 million silica particles-years were excreting silica in their urine in amounts less than 2.0 milligrams per 100 cc.

Table 1 indicated that 20 former miners were included in this study. These men were residing in a sanatorium for chronic diseases; and since they were all living under similar conditions, the factor of diet, which was shown by King to influence the urinary silica excretion, would not enter into the present picture. These former mine workers were found to have had an exposure to anthracite coal dust averaging 37 years and had been out of the industry an average of 7 years. The average urinary silica of these men was 2.1 milligrams per 100 cc, and was greater than the amounts found in non-miners at the same

institution. This finding is also in agreement with that of King and Dolan, who obtained corresponding data on a group of 6 gold miners not exposed to dust at the time of examination. The anthracite mine workers who had been free from dust exposure for less than 5 years were found to be excreting slightly more silica than those who had been away from the industry for a longer period.

The present brief inquiry does not furnish sufficient data to determine the value of the urinary silica examination as an aid in the diagnosis of anthraco-silicosis. Excessive silica excretion probably merely indicates an abnormal intake of silica. It does, however, furnish additional evidence of the etiology of the disease.

SUMMARY

One hundred and twenty-three anthracite coal workers, 20 of whom had been out of the industry an average of 7 years, were examined for urinary silica by the method of King and Dolan. The amounts of silica found in the urine varied from 0.6 to 11.7, and averaged 2.5 milligrams per 100 cc. Normal individuals were found to be excreting only an average of 1.0 milligram per 100 cc. A close correlation was found between the silica dust exposure of these men for a specified number of years and the amount of urinary silica. A study of former anthracite coal workers showed that even after a lapse of several years away from any silica dust exposure, an increased amount of silica is being excreted by them. These findings furnish additional evidence of the etiology of the disease.

REFERENCES

(1) King, Earl J., and Dolan, Margery: Silicosis and the metabolism of silica. The Canadian Medical Association Journal, Vol. 31, pp. 21–26. 1934.
(2) Public Health Bulletin, U. S. Public Health Service. In preparation.

MOTTLED ENAMEL IN TEXAS

By H. Trendley Dean, *Dental Surgeon, United States Public Health Service,* and R. M. Dixon, *District Sanitary Engineer,* and Chester Cohen, *Principal Assistant Engineer, Texas State Department of Health*

INTRODUCTION

Since 1916 there have been occasional references (1), (2), (3), (4), in the literature inviting attention to the presence of mottled enamel in west Texas. In 1932 (5) a detailed questionnaire survey by the United States Public Health Service indicated that the Panhandle-west Texas region was probably the largest mottled enamel area in the United States with more people affected. This report showed that there were at least 26 west Texas counties in which mottled

enamel was endemic and that such large centers of population as the cities of Amarillo, Lubbock, and Plainview were seriously affected. In addition, the possibilities of other affected areas in Texas became evident when mottled enamel was reported as endemic at Taylor, in Williamson County. Lemmon (6), a pediatrician, has recently called to the attention of the Texas medical profession the relationship between mottled enamel and child hygiene and nutrition.

METHOD OF SURVEY

This survey was a cooperative study made by the United States Public Health Service and the Texas State Department of Health during November and the early part of December 1934. Each of the communities hereinafter referred to was visited, and subsequently, with the cooperation of the local superintendent of education, school children, generally of the fourth, fifth, and sixth grades, were examined. A total of 66 cities, towns, or rural communities in 44 counties was visited and 3,723 school children were examined. The purpose of the survey was to obtain general information relative to the extent of the affected territory and a rough index of the degree of severity of the mottled enamel being produced.

Upon visiting a classroom, the purpose of the survey was first explained, and those children who had lived in the community continuously since birth and who had always used the city water for domestic purposes (cooking and drinking) were assembled in a separate group. This group was further questioned to determine whether there had been any breaks in the continuity of their residence and water consumption. Under good illumination each child was examined by one of us (H. T. D.) and the presence or absence of mottled enamel recorded. The degree of severity was noted in accordance with a standard of classification previously described (7). In many instances the children with variable residences and water histories were likewise examined under the same conditions.

The basis upon which the various degrees of mottle enamel were classified is, briefly, as follows:

NORMAL (FIG. 1)

The enamel presents the usual translucent semivitriform type of structure. The surface is smooth, glossy, and usually of a pale, creamy white color. In addition to those teeth showing normal calcification, for purposes of mottled enamel classification there is also included under this heading all individuals with permanent teeth showing hypoplasias *other* than mottled enamel. Such hypoplasias of the enamel are, in the main, those characteristic of Hutchinson's teeth and the hypoplasias concomitant with the exanthematous diseases and nutritional disturbances during the period of the enamel development of the permanent teeth. If an examination of a person reveals the presence of one of the previously mentioned hypoplasias *and* mottled enamel, the examination is recorded solely

institution. This finding is also in agreement with that of King and Dolan, who obtained corresponding data on a group of 6 gold miners not exposed to dust at the time of examination. The anthracite mine workers who had been free from dust exposure for less than 5 years were found to be excreting slightly more silica than those who had been away from the industry for a longer period.

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on the basis of the mottled enamel present and is listed under its proper mottled enamel classification.

QUESTIONABLE (FIG. 2)

In areas of relatively high endemicity, over 75 percent, there are at times cases which the experienced investigator occasionally hesitates to classify either as apparently normal or very mild. Such cases are listed as questionable. In studying a "border line" area, or a community where the causative factor of mottled enamel is present in the water supply quantitatively somewhere between the maximum harmless amount and the minimum capable of producing the "very mild" and "mild" type of mottled enamel in 35 percent or more of the children who have used the particular water exclusively from birth, this classification is frequently needed. In such areas there is generally a higher percentage of individuals classed as normal than the combined group of "very mild" and "mild." There is, however, always a certain percentage of those individuals with comparable histories, that discloses slight aberrations in the translucency of normal enamel ranging from a few white flecks to occasional white spots. Furthermore, in some instances, thin, irregular, white, opaque streaks, or veining, are noted on the incisal third of the superior incisors. In other cases the tip of the summit of the bicuspids shows an unusual white opacity two or three millimeters in extent, the remainder of the tooth being apparently normal. As such cases are not sufficiently developed to be classed as "very mild", and are definitely not "normal", they are listed as questionable.

VERY MILD (FIG. 3)

Small, opaque, paper-white areas are scattered irregularly or streaked over the tooth surface. This mottling is principally observed on the labial and buccal surfaces and involves up to 25 percent of the tooth surface of the particular teeth affected. Small, pitted, white areas are frequently found on the summit of the cusps. Brown stain is rarely observed in the mottled enamel of this classification and, if present at all, is so faint as to be almost indistinct.

In areas of high endemicity, mottled enamel is not infrequently observed on the deciduous molars and occasionally the deciduous cuspids. Mottled enamel in deciduous teeth is generally of the very mild type, even though the permanent teeth in the same individual may show moderate to severe mottling.

MILD (FIG. 4)

The white opaque areas in the enamel of the teeth involve at least half of the tooth surface. The surfaces of molars, bicuspids, and cuspids subject to attrition show thin white layers worn off and the bluish shades of underlying normal enamel. Light brown stains are sometimes apparent, generally on the superior incisors.

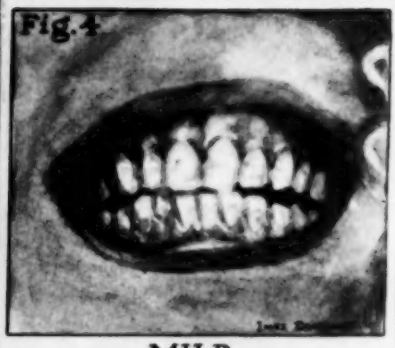
MODERATE (FIGS 5 AND 6)

No change is observed in the form of the tooth, but generally all tooth surfaces are involved. Surfaces subject to attrition are definitely marked. Minute pitting is often present, generally on the labial and buccal surfaces. Brown stain is frequently a disfiguring complication. For the most part the stain ranges from tan to chocolate in color and not infrequently involves as much as half of the labial surface. It must be remembered, however, that the incidence of brown stain varies greatly in different endemic areas and many cases of white opaque mottled enamel, without brown stain, are classified as "moderate" and listed in this category.

NORMAL *

QUESTIONABLE

VERY MILD



MILD

* THE APPARENT WHITE SPOTS ON THE LABIAL AND BUCCAL SURFACES IN THIS REPRODUCTION (NORMAL) DEPICT "HIGH LIGHTS" AND ARE NOT MOTTLED ENAMEL.

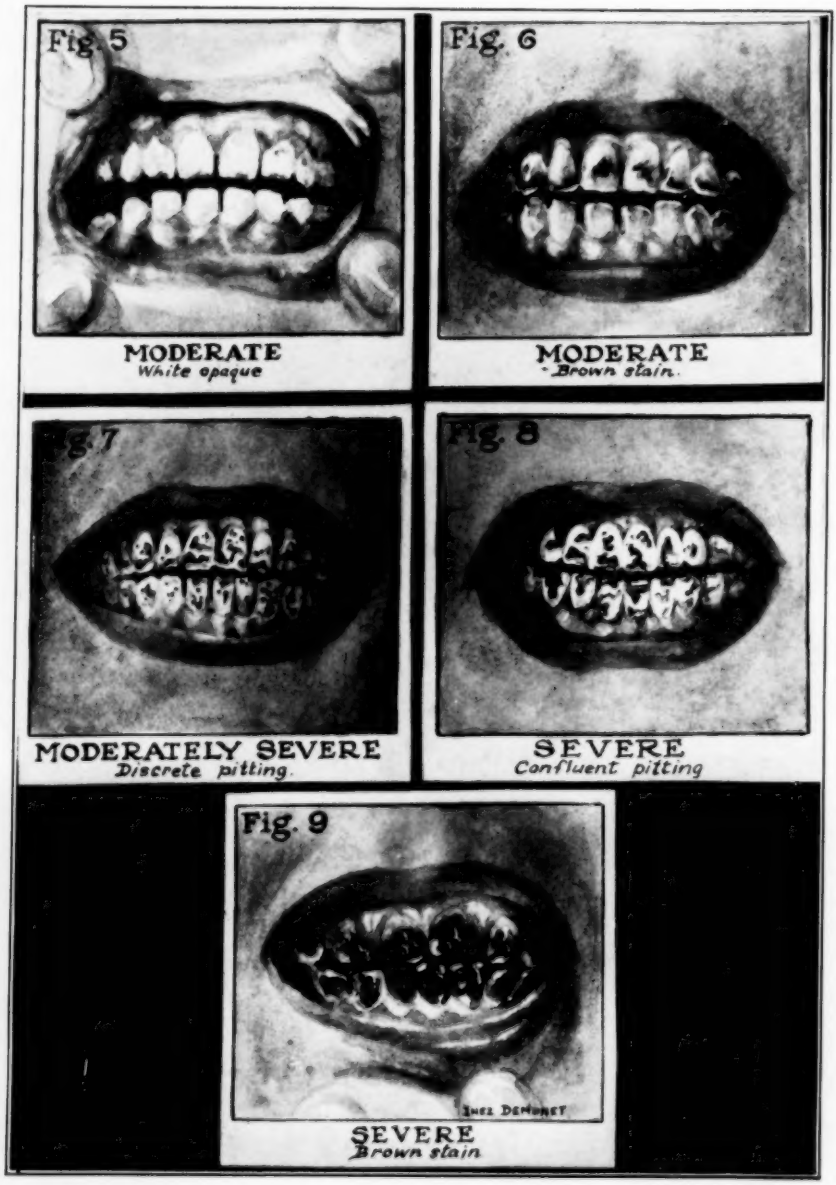


Fig. 5
MODERATE
White opaque
Fig. 6
MODERATE
Brown stain.
Fig. 7
MODERATELY SEVERE
Discrete pitting.
Fig. 8
SEVERE
Confluent pitting
Fig. 9
INEZ DEMOREST
SEVERE
Brown stain

MODERATELY SEVERE (FIG. 7)

Macroscopically a greater depth of enamel appears to be involved. A smoky white appearance is often noted. Pitting is more frequent and generally observed on all tooth surfaces. The pits are discrete and may be 1 to 2 millimeters in diameter. Brown stain, if present, is generally deeper in hue and involves more of the tooth surface. The diagnostic sign of this classification is, however, the discrete pitting.

SEVERE (FIGS. 8 AND 9)

The hypoplasia is so marked that the form of the teeth is at times affected; the older children often present a mild incisal-occlusal pathological abrasion. The pits are deep and very often confluent. As a result of confluent pitting, which is the diagnostic sign of this classification, the outer surface of the enamel is lost in places and the tooth often presents a corroded-like appearance. Stains are widespread and range in color from chocolate brown to almost black.

MOTTLED ENAMEL INDEX OF A COMMUNITY

The various degrees of mottled enamel severity having been defined, the application of this classification to the determination of a mottled enamel index of a community is necessary for epidemiological purposes and subsequent correlation with chemical and other studies.

Accordingly the following indexes have been arbitrarily defined in terms of the degree of severity of mottled enamel observed clinically:

NEGATIVE: When less than 10 percent of the children show "very mild" or more severe types of mottled enamel.

BORDER LINE: When 10 percent or more, but less than 35 percent, show "very mild" mottled enamel or worse.

SLIGHT: 35 percent or more show "very mild" or worse, but less than 50 percent are mild or worse, and less than 35 percent "moderate" or worse.

MEDIUM: 50 percent or more are mild or worse, but less than 35 percent are "moderate" or worse.

RATHER MARKED: 35 percent or more, but less than 50 percent are "moderate" or worse, but less than 35 percent are "moderately severe" or worse.

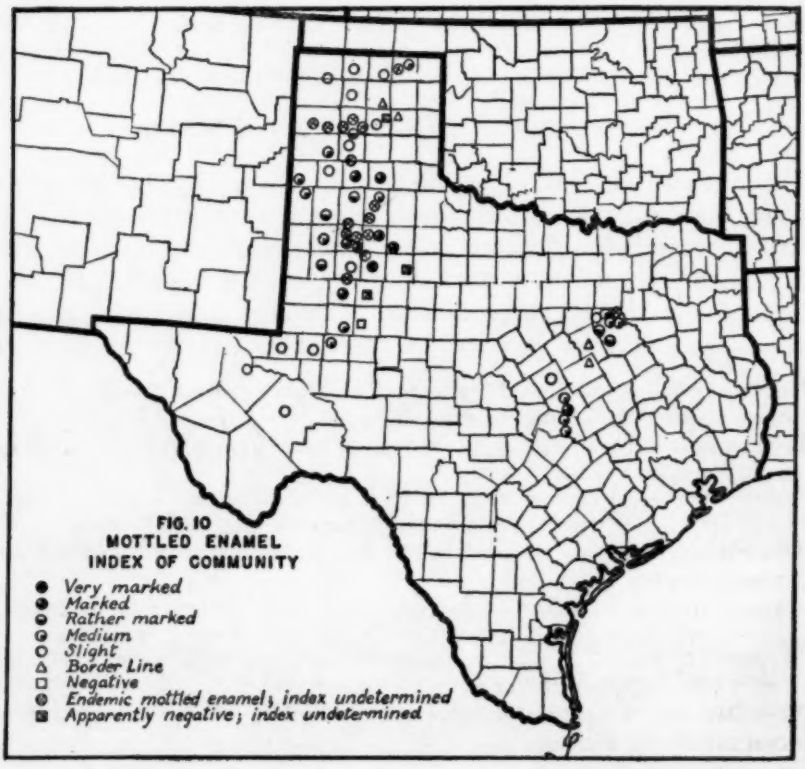
MARKED: 50 percent or more are "moderate" or worse, but less than 35 percent are "moderately severe" or worse.

VERY MARKED: 35 percent or more are classified as "moderately severe" or worse.

All children included in a group utilized in the determination of a mottled enamel index of a community refer to children whose time of risk of exposure had been constant, meaning that the children were born in the community, had lived there all their lives (short vacations totaling less than 30 days in one calendar year excepted), and had always used the municipal or common water supply for cooking and drinking purposes. In certain west Texas communities the mottled enamel index could be determined only tentatively at this time. The reason for a tentative index will be made apparent in the section dealing with the factor of population influx.

FACTOR OF POPULATION INFLUX

The factor of population changes and its relation to changes of water supply are obviously of paramount importance in mottled enamel investigation. The pertinent facts concerning population movements have a direct bearing on the west Texas survey. There has been a rapid growth and development of west Texas during the period between 1920 and 1930. The marked migration into west Texas during this decade is well illustrated by an examination of the reports of the Bureau of the Census (8). The percentage increase in



population between 1920 and 1930 for the State of Texas was 24.9, while the population of the 37 west Texas counties covered by this report increased from 138,851 in 1920 to 379,881 in 1930, or 173.6 percent.

As a result of the unusual increase in population in west Texas during the period between 1920 and 1930, a large number of children disclosed histories of residence in nonendemic and endemic areas, or of having lived continuously since birth in a community where the municipal water supply had been installed or changed during the life of the child. It was not infrequent to find that smaller cities or

towns had installed municipal water only as late as 6 to 8 years ago; previous to that time the few inhabitants depended on individual windmill wells.

In all of such places the attempt was made to determine whether the municipal water supply was producing mottled enamel by an examination of those children in the fifth and sixth grades who had used the municipal water exclusively for at least the past 6 years. In such groups the examination was limited to the cuspids, bicuspids, and second molar teeth, and the presence or absence of mottled enamel recorded on the basis of these observations. Under such conditions the mottled enamel index given to such communities is necessarily tentative. Each community should be resurveyed 3 or 4 years hence to determine its actual or approximate mottled enamel index.

WATER SUPPLIES

In the west Texas phase of the survey, another of us (R. M. D.) obtained all relative data available concerning the municipal supply from the local water superintendent, and collected one or more samples of the supply. When the municipal supply was a composite water from more than one stratum, two or more samples were collected whenever possible. These samples were forwarded to the Texas State Department of Health in whose laboratories the fluoride determinations are being made. The report of the chemical determination of these waters associated with endemic mottled enamel will be made the basis of a separate report. The information included in this report regarding municipal water supplies of the affected communities in the east central Texas area has been obtained by another of the authors (C. C.).

In west Texas there are apparently three strata of water-bearing sands, in general not widely separated in depth. Practically all wells in this region are drilled, and it is customary to refer to drilled wells obtaining water from the first stratum as "shallow," and from the second or third stratum as "deep." Consequently in one county the term "shallow" may be applied to a 300-foot drilled well because water from the second or third stratum is not obtained until a depth of 450 or 500 feet is reached, while in another county, the term "deep" well may be applied to a 125-foot well because the first stratum of water in that particular locality is reached at 80 feet.

SURVEY FINDINGS

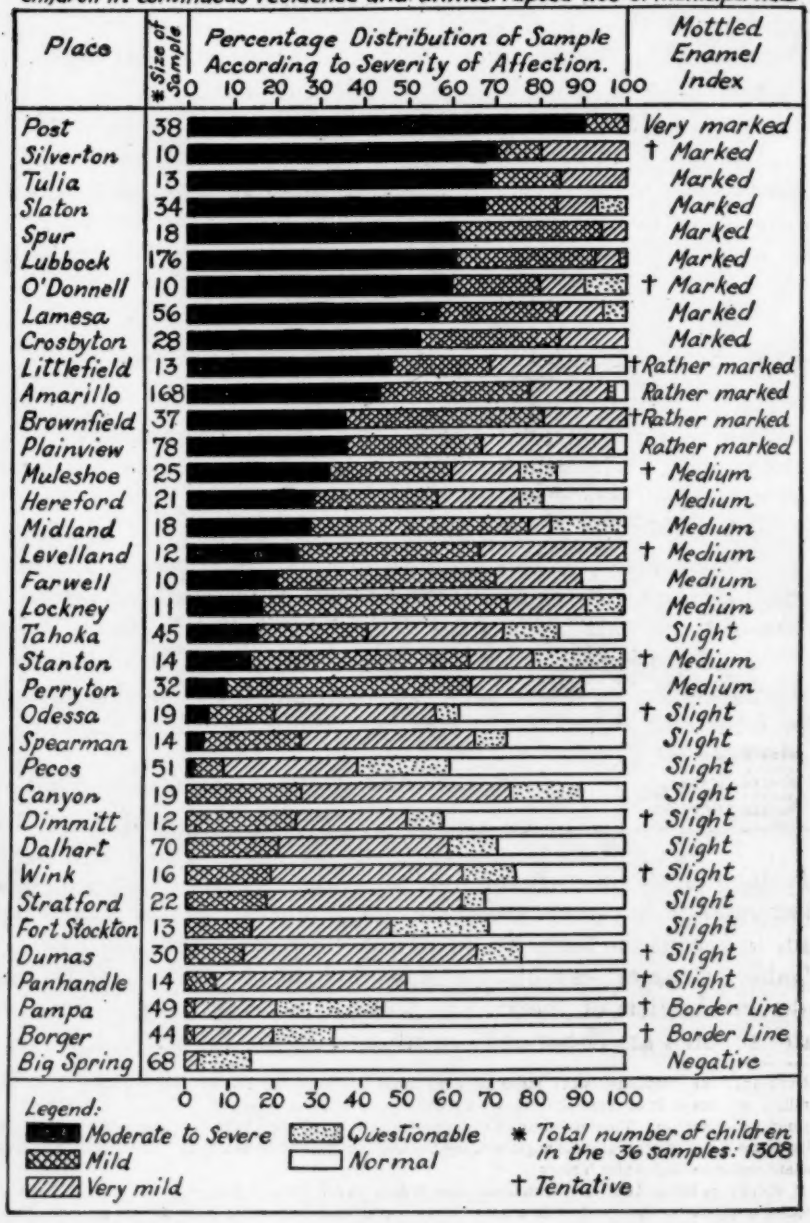
The results of this survey are summarized as follows:

Table 1 details the mottled enamel findings and history of common water supplies in certain cities of the Panhandle, west Texas, and

FIG. II

SEVERITY OF MOTTLED ENAMEL IN CHILDREN OF CERTAIN SELECTED PLACES OF THE PANHANDLE AND WEST TEXAS

Children in continuous residence and uninterrupted use of municipal water

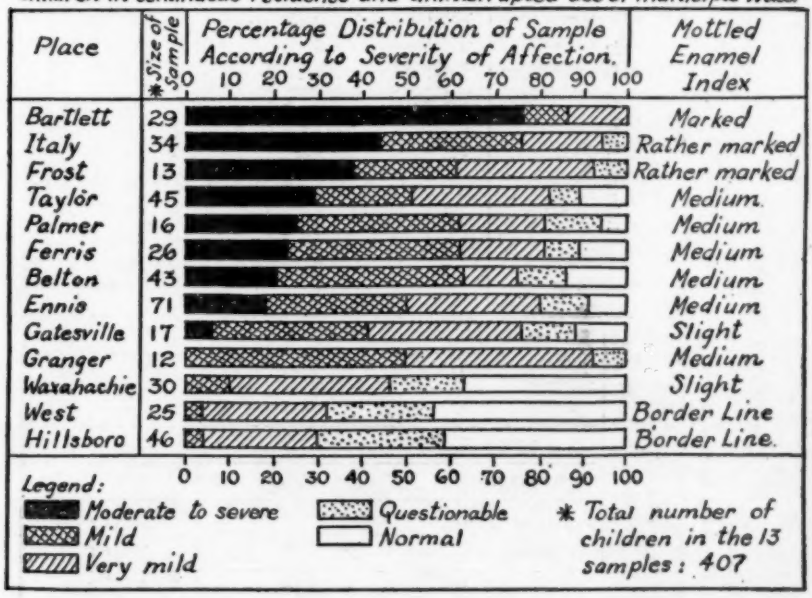


east central Texas. In these cities a sufficient number [1] of children with a history of continuous residence and constant use of the city water were examined to warrant the development of an approximate [2] or tentative mottled enamel index of the community. Figures 11 and 12 illustrate the percentage distribution of that part of the sample having continuous residence and constant use of a common water supply listed according to severity of affection, and they also show either the approximate or tentative mottled enamel index of the community.

FIG. 12

SEVERITY OF MOTTLED ENAMEL IN CHILDREN OF CERTAIN SELECTED PLACES OF EAST CENTRAL TEXAS.

Children in continuous residence and uninterrupted use of municipal water



In table 2 are listed four small communities possessing municipal water supplies, but where an insufficient number of examinations were made to permit the computation of a mottled-enamel index.

Table 3 summarizes mottled enamel findings in certain communities and rural districts of the Panhandle and west Texas where common water supplies are either not available or, in two instances, not used.

[1] Ordinarily the mottled-enamel index of a community should not be determined unless the group examined consists of 25 or more children with a continuous residence since birth and a constant use of a common water supply. This minimum standard could not be adhered to in all instances in this survey owing to the factor of population changes or a smaller number of children available in the school showing a constant residence and water history.

[2] It should be noted that an "actual mottled enamel index" is not given a community unless all histories as given by the child, with respect to both residence and water supplies, are rechecked and confirmed by an interview with the child's parents.

TABLE 1.—*Summary of mottled enamel findings and history of water supply in certain cities of (1) Panhandle and west Texas and (2) east central Texas*

1. PANHANDLE AND WEST TEXAS

City and population (census of 1930)	Total number of children examined	Children classified according to mottled enamel diagnosis													History of water supply	Remarks
		(A) Continuous residence with constant use of city water							(B) Changes in residence and/or water history							
		Normal	Questionable	Very mild	Mild	Moderate	Moderately severe	Severe	Normal	Questionable	Very mild	Mild	Moderate	Moderately severe	Severe	
Post (1,668)	38	0	0	0	4	19	13	2	(1)	(1)	(1)	(1)	(1)	(1)	(1)	Present supply in constant use since prior to 1922; obtained from 13 wells 85 feet to 100 feet deep; apparently in first stratum.	Sample represents all children in the fourth, fifth, and sixth grades who used city water continuously. Post is located east of the cap rock, but the wells from which the supply is obtained are 3 to 4½ miles west of Post, and on the cap rock.
Silverton (873)	45	0	0	2	1	6	1	0	7	1	8	8	7	4	0	Obtained from 120 feet (1924) and 150 feet (1928) wells in first stratum, similar to local windmill wells. City supply in general use last 6 years only.	Entire sixth grade examined; "B" also includes some children from immediate rural districts.
Tulia (2,202)	61	0	0	2	2	8	1	0	7	2	12	13	13	1	0	From North well 168 feet (1922) and South well 60 feet (1925). Apparently first stratum. Most of water supply at present from the South well.	Entire sixth grade examined; "B" also includes children from immediate rural district.
Slaton (3,876)	34	0	2	3	6	19	3	1	(1)	(1)	(1)	(1)	(1)	(1)	(1)	From 1922–24, shallow wells, first stratum. Since 1924, 3 wells, 125, 135, and 210 feet. First 2 take water from first and second strata; third well from all 3 strata.	Sample represents all children of fourth, fifth, and sixth grades who used city water continuously.
Spur (1,899)	24	0	0	1	6	11	0	0	4	0	0	1	1	0	0	Municipal water supply is obtained from 3 wells, each 44 feet deep. Spur is located east of the cap rock, but is apparently drawing its water from the cap rock aquifer.	Sample under "A" represents all children in fifth and sixth grades with constant history. Four normals under "B" used cistern water exclusively.
Lubbock (20,520)	176	0	2	11	54	77	31	1	(1)	(1)	(1)	(1)	(1)	(1)	(1)	Municipal water obtained from 8 drilled wells with standard steel casing the entire depth, and averaging 98 to 150 feet.	Sample represents all white children in fourth, fifth, and sixth grades of public schools whose histories indicated constant use of city water since birth.

O'Donnell (1,026)	27	0	1	1	2	6	0	0	2	1	6	5	2	1	0	Obtained from seven 80-foot uncased wells, taking water from first stratum. 5 were drilled in 1928 and 2 in 1932. No common water supply prior to 1928.	"B" includes children from immediate rural district and "A" sample, all children third, fourth, and fifth grades who used city water past 5 years.
Lamesa (3,528)	56	0	3	6	15	23	9	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	1921 to 1929 obtained from 3 wells, 90, 140, and 300 feet, respectively. Since 1929, 3 wells 140 feet, taking water from second stratum.	Sample represents all children in the third, fourth, and fifth grades who used city water continuously since birth.
Crosbyton (1,250)	28	0	0	4	9	14	1	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	From two 280-foot wells drilled in 1918 and 1930 and taking water from the second stratum.	Do.
Littlefield (3,218)	84	1	0	3	3	5	1	0	21	6	17	16	11	0	0	From four 120-foot wells drilled in 1926 and 1927, obtaining water from the first stratum. No common water supply prior 1926.	"A" sample represents all children in fifth and sixth grades who used city water continuously since installation.
Amarillo (43,132)	533	5	1	30	58	60	12	2	126	15	90	86	42	6	0	From 10 wells (1927) 180 feet deep and 5 (1931) 280-foot wells. Previous 1927 from thirty-five 250-foot wells located in various parts of the city.	Sample consists of entire fourth, fifth, and sixth grades in 3 white and 1 colored public schools.
Brownfield (1,907)	37	0	0	7	17	10	3	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	Since 1925 from 2 dug wells 103 and 117 feet, taking water from first stratum. Prior 1925 no municipal supply.	Sample represents all children in fourth, fifth, and sixth grades who used city water continuously since 1925.
Plainview (8,834)	78	2	0	24	24	26	2	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	From 3 wells 95, 175, and 275 feet. Prior to 1926 first 2 wells only were used; 1926–28 275-foot well used solely. Present supply composite of all 3 wells.	Sample represents children in fifth, sixth, seventh, and eighth grades, who used municipal water continuously since birth.
Muleshoe (779)	72	4	2	4	7	7	1	0	22	2	11	7	3	2	0	From 1 well (1927) 90 feet deep, obtaining water from first stratum and apparently comparable with many local windmill wells. No supply prior 1927.	"A" sample represents all children in fifth, sixth, and seventh grades, who used city water continuously for past 6 years.
Hereford (2,458)	92	4	1	4	6	4	2	0	11	8	15	16	18	3	0	From three 60-foot wells drilled in 1919, 1921, and 1925. Many individual windmill wells used prior to 1927 comparable in depth.	"B" sample includes many children using individual windmill wells, both city and immediate rural district.
Midland (5,484)	18	0	3	1	9	5	0	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	Since 1928 from 2 wells 130 feet; 1910–28, from wells approximately 90 feet.	Sample represents all children in fifth and sixth grades using city water continuously since birth.
Levelland (1,661)	77	0	0	4	5	3	0	0	16	8	15	13	12	1	0	From two 185-foot wells drilled 1928–29. Water obtained from second stratum; first stratum is cased off at 120 feet. No common water supply prior 1928.	"A" sample represents all children in fifth and sixth grades who used city water for past 6 years.
Farwell (647) [2]	52	1	0	2	5	2	0	0	20	2	13	5	2	0	0	Obtained from one 300-foot well drilled in 1922; due to perforated casing water is obtained from both strata. Same water supply is used in adjoining Texico, N. Mex.	"A" sample represents all children in fourth, fifth, sixth, and seventh grades who used city water continuously.
Lockney (1,466)	30	0	1	2	6	2	0	0	0	0	8	9	2	0	0	Obtained from one 120-foot well drilled in 1928, cased to the first stratum. Prior to 1928 municipal supply from a well same depth but not cased.	"B" sample represents children using windmill well water continuously from birth in Lockney and immediate rural district.

[1] None examined.

[2] Rand McNally pocket map of Texas, 1934.

TABLE 1.—*Summary of mottled enamel findings and history of water supply in certain cities of (1) Panhandle and west Texas and (2) east central Texas*—Continued

1. PANHANDLE AND WEST TEXAS—Continued

City and population (census of 1930)	Total number of children examined	Children classified according to mottled enamel diagnosis													History of water supply	Remarks
		(A) Continuous residence with constant use of city water							(B) Changes in residence and/or water history							
		Normal	Questionable	Very mild	Mild	Moderate	Moderately severe	Severe	Normal	Questionable	Very mild	Mild	Moderate	Moderately severe	Severe	
Tahoka (1,620)	58	7	6	14	11	7	0	0	2	2	0	3	5	1	0	From 11 wells 80 to 100 feet deep obtaining water from first stratum. First well drilled 1924; subsequent wells added as needed; 9 wells are "gravel backed."	"A" sample, all children in second, third, fourth, fifth, and sixth grades using city water continuously since birth. "B" sample, children from immediate rural district.
Stanton (1,384)	14	0	3	2	7	2	0	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	From 3 wells, 2 drilled 1927, 1 in 1930, each 135 feet; first stratum cased off. No common water supply prior to 1927.	Sample consists of children in fourth, fifth, and sixth grades using municipal water continuously since 1927.
Perryton (2,824)	137	3	0	8	18	3	0	0	38	9	33	21	4	0	0	From two 400-foot "gravel backed" wells installed 1927. City water is a composite from all 3 strata. Municipal supply in use since 1923.	Entire fifth and sixth grades, Perryton and rural school district.
Odessa (2,407)	32	7	1	7	3	1	0	0	7	1	1	3	1	0	0	From six 140-foot wells; 5 drilled 1928, 1 in 1933. No city water prior to 1928.	Both samples from third and fourth grades. "A" used city water constantly past 6 years. "B" used individual wells constantly since birth.
Spearman (1,580)	107	2	1	5	5	1	0	0	48	8	27	9	1	0	0	From two 350-foot wells drilled 1924 and 1927. Stratum from which water is obtained is unknown.	All of fifth and sixth grades examined, Spearman and rural school district.
Pecos (3,304)	51	20	11	16	3	1	0	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	From 2 wells 280 feet deep drilled 1914. The first stratum is cased off.	Sample consists of all children in third, fifth, sixth, and seventh grades using city water exclusively since birth.
Canyon (2,821)	89	2	3	9	5	0	0	0	15	6	15	16	16	2	0	Since 1928 from 500-foot well of West Texas Utility Co. Prior to 1928 from 4 city wells, 250 to 500 feet. No data procured on stratum or strata from which these waters were and are obtained.	In sample "B" there were 14 children from immediate rural district who always used water from individual windmill wells. They show a more severe type of mottled enamel than those using Canyon city water.
Dimmitt (829)	53	5	1	3	3	0	0	0	12	6	6	10	5	2	0	From one 230-foot well drilled 1927. No data on stratum from which water is obtained. Prior to 1927 there was no common water supply.	"A" sample represents all children in fifth and sixth grades using city water constantly for past 6 years. In sample "B" there were 9 children from imme-

																	diate rural district who from birth continuously used water from individual wells. All showed a more severe type of mottled enamel than those using Dimmitt city water.
Dalhart (4,691)	248	20	8	27	15	0	0	0	100	8	43	22	5	0	0	From 2 wells 340 feet deep, drilled 1928. Prior 1928 water obtained from wells of similar depth.	Examinations were made of children in fourth, fifth, and sixth grades.
Wink (3,963)	16	4	2	7	3	0	0	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	From 5 wells 220 feet deep, drilled 1927; first stratum is cased off. At present only 1 well is being used. No common water supply prior 1927.	Sample taken from fourth grade, none over 10 years of age and had used city water for at least past 6 years.
Stratford (873)	76	7	1	10	4	0	0	0	27	10	10	6	1	0	0	From the 302-foot well, drilled 1930, and owned by the West Texas Utility Co. No information obtained concerning previous municipal supply.	Examinations included all children of fourth, fifth, and sixth grades.
Fort Stockton (2,695)	13	4	3	4	2	0	0	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	From 175-foot well, drilled 1927. Between 1923–30 water was obtained from 2 wells 306 and 365 feet. These wells were abandoned in 1930. Between 1927–30 the supply was composite of all wells.	Sample represents all children in fourth fifth, and sixth grades who used city water continuously.
Dumas (700) [1]	86	7	3	16	4	0	0	0	39	4	9	3	1	0	0	From 2 wells 530 and 550 feet, installed in 1930. No information regarding stratum from which water is obtained.	All children in the fourth and fifth grades were examined.
Panhandle (2,035)	42	7	0	6	1	0	0	0	10	5	8	5	0	0	0	From 2 wells each 550 feet, installed 1927. No information on stratum from which water is obtained. No common water supply prior 1927.	All children in sixth grade examined. "A" sample represents children using city water for the past 6 years.
Pampa (10,470)	117	27	12	9	1	0	0	0	46	9	10	3	0	0	0	Present supply from 3 wells, 384 feet, cased entire depth, and taking water from third stratum. There are 6 other wells not being used at present.	All children in sixth grade examined. "A" sample represents children using city water for the past 6 years or longer.
Borger (6,532)	124	29	6	8	1	0	0	0	57	10	10	3	0	0	0	From wells 250 to 500 feet, located 18 miles south in Carson County (Plain Station) and installed 1928. No common water supply prior 1928.	All of fifth and sixth grades examined. "A" sample represents children using city water for the past 6 years.
Big Spring (13,735)	68	58	8	2	0	0	0	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	Municipal supply consists of 23 wells. One-third of supply from 13 wells 260 feet, drilled in 1923. Two-thirds of supply from 8 wells 280 to 300 feet, drilled 1927. Between 1894–1923 all municipal water from "Old Park" supply, which was supplemented until 1927 with 1923 group of wells. Between 1927–33 "Old Park" supply shut down. Between November 1933 and May 1934, 1927 group of wells also shut down. Wells located 2, 6, and 9 miles, respectively, south of Big Spring.	Sample consists of all children in fifth and sixth grades whose history indicated constant residence and continuous use of city water.
Total	2,893	226	85	264	325	322	80	6	637	123	367	283	152	23	0		

[1] None examined.

[1] Rand McNally pocket map of Texas, 1934.

TABLE 1.—*Summary of mottled enamel findings and history of water supply in certain cities of (1) Panhandle and west Texas and (2) east central Texas*—Continued

2. EAST CENTRAL TEXAS

City and population (census of 1930)	Total number of children examined	Children classified according to mottled enamel diagnosis													History of water supply	Remarks
		(A) Continuous residence with constant use of city water							(B) Changes in residence and/or water history							
		Normal	Questionable	Very mild	Mild	Moderate	Moderately severe	Severe	Normal	Questionable	Very mild	Mild	Moderate	Moderately severe	Severe	
Bartlett (1,873)	29	0	0	4	3	18	3	1	(1)	(1)	(1)	(1)	(1)	(1)	(1)	From a 2,005-foot well drilled 1901 and in constant use since. Apparently obtaining water from different strata.	Sample consists of all children in fifth, sixth, and seventh grades with a continuous residence since birth and constant use of city water.
Italy (1,230)	34	0	2	6	11	10	5	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	From 850-foot well drilled 1912 and in constant use since. According to local data water is obtained from second Woodbine stratum.	Sample consists of all children in fourth, fifth, sixth, and seventh grades who comply with "A" classification.
Frost (748)	13	0	1	4	3	5	0	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	From 1,184-foot well drilled 1903 into the Trinity sands. This is the only supply used since that year.	Sample consists of all children in fifth, sixth, and seventh grades who comply with "A" classification.
Taylor (7,463)	45	5	3	14	10	8	5	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	From a 3,260-foot well drilled 1913 and a 3,300-foot well drilled 1934. Due to high sulphur content of city water some inhabitants use cistern water for certain domestic purposes.	Sample consists of all children in the sixth grade coming under "A."
Palmer (758)	16	1	2	3	6	2	2	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	Between 1900 and 1928 supply obtained from 1,170-foot well; 1928 to date, entire city supply obtained from 1,172-foot well drilled into Woodbine stratum.	Sample consists of all children in the third, fourth, and fifth grades who comply with "A" classification.
Ferris (1,438)	26	3	2	5	10	5	1	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	Since 1921 entire city water supply obtained from a 1,400-foot artesian well.	Sample consists of all children in the fourth, fifth, and sixth grades who comply with "A" classification. During the examination in Ferris, 5 pupils who had always lived in the nearby community of India, but who attended school in Ferris, were observed. All 5 showed mottled enamel moderate in severity. These 5 are not included in the Ferris totals.

Belton (3,779)	43	6	5	6	17	7	2	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	From 2 wells, 1 drilled 1903, 980 feet in the first Trinity sands, and 1 drilled 1915, 1,180 feet into the second Trinity sands.	Sample consists of all children in the fifth and sixth grades who comply with "A" classification.
Ennis (7,069)	71	8	6	21	23	10	3	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	From 1909–25 supply obtained from two 1,325-foot wells drilled to the first Woodbine sand. August 1925 well installed, obtaining water from the second Woodbine sand between 1,700 and 1,798 feet deep; 1930 the smaller of the first 2 wells was abandoned. Present supply comes from one 1,325-foot well and one 1,798 feet, the latter in the second Woodbine stratum, and furnishing the major portion of the water supply since 1926.	Sample consists of all children in the third, fourth, and fifth grades who comply with "A" classification.
Gatesville (2,601)	17	2	2	6	6	1	0	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	From two 700-foot wells drilled in 1910 and in constant use since that date.	Sample consists of all children in the sixth grade who comply with "A" classification.
Granger (1,703)	12	0	1	5	6	0	0	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	From a 2,531-foot well drilled 1906 or 1907 and in constant use since that year.	Sample consists of all children in the sixth and seventh grades who comply with "A" classification.
Waxahachie (8,042)	30	11	5	11	3	0	0	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	Since 1913 from 3 wells, 2,900 to 3,000 feet, drilled into the Trinity sands. These wells were drilled 1913, 1925, and 1931, respectively.	Sample represents children from the fourth, sixth, and seventh grades of the Central Ward School who comply with "A" classification.
West (1,807)	25	11	6	7	1	0	0	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	From a well, 2,200 feet deep, drilled 1894 into the second Trinity sands and in continuous use since that year.	Sample consists of all children in the fifth and sixth grades who comply with "A" classification.
Hillsboro (7,823)	46	19	13	12	2	0	0	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	Since 1923 city water supply obtained from 14 wells. There is considerable variation in the depth and strata from which the water is and was obtained. Limited space precludes detailed description of this supply.	Sample consists of all children in the sixth grade who comply with "A" classification.
Total	407	66	48	104	101	66	21	1	(1)	(1)	(1)	(1)	(1)	(1)	(1)		
Grand total (1 plus 2)	3,300	292	133	368	426	388	101	7	637	123	367	283	152	23	0		

(1) None examined.

[1] Rand McNally pocket map of Texas, 1934.

TABLE 2.—*Summary of mottled enamel findings in certain communities of the Panhandle and west Texas with a common water supply but where an insufficient number of examinations precluded the computation of a mottled enamel index*

City and population (census of 1930)	Total number of children examined	Children classified according to mottled enamel diagnosis													History of water supply	Remarks
		(A) Continuous residence with constant use of city water							(B) Changes in residence and/or water history							
		Normal	Questionable	Very mild	Mild	Moderate	Moderately severe	Severe	Normal	Questionable	Very mild	Mild	Moderate	Moderately severe	Severe	
Lorenzo (739)	25	0	0	1	4	2	0	0	2	4	4	4	3	1	0	Municipal water supply obtained from one 280-foot well, drilled in 1926. First stratum cased off.	Sample "A" represents all children in the third and fourth grades who used city water for the past 6 years. Sample "B" represents children who have used continuously water from local or nearby rural windmill wells.
Idalou (538)	33	0	0	1	2	3	2	0	1	1	5	6	12	0	0	From 1 well, drilled in 1925, 136 feet. First stratum cased off and city supply obtained from second stratum.	Sample "A" represents children from the second, third, fourth, and fifth grades. Sample "B" represents children who have used continuously water from nearby rural windmill wells.
White Deer (1,010)	28	6	0	0	0	0	0	0	18	0	3	1	0	0	0	From one 396-foot well, drilled in 1926, cased entire depth and obtaining water from the "bottom" stratum only.	Sample "A" represents all children of the sixth grade coming under that classification. High percentage of children showing normal calcification warrants a detailed epidemiological survey.
Vega (519)	37	0	0	1	3	2	0	0	10	2	8	9	2	0	0	From 2 wells, one 240-foot, drilled in 1921, and one 396-foot, drilled in 1928. The latter supplies practically all the water.	Sixth and seventh grades examined. "B" includes children from immediate rural districts.
Total	123	6	0	3	9	7	2	0	31	7	20	20	17	1	0		

TABLE 3.—*Summary of mottled-enamel findings in certain communities of the Panhandle and west Texas with no common water supply. (See two exceptions under "Remarks")*

COMMUNITIES WHERE WATER FROM INDIVIDUAL WINDMILL WELLS IS USED

City and population (census of 1930)	Total number of children examined	Children classified according to mottled enamel diagnosis							History of water supply and remarks
		Normal	Questionable	Very mild	Mild	Moderate	Moderately severe	Severe	
Southland (400)[1]	21	0	0	0	4	12	5	0	Sample represents all children in fourth and fifth grades who stated they had either lived in Southland or immediate rural school district all their lives and had always used water from windmill wells. Individual windmill wells in this particular area are approximately 100 to 125 feet in depth.
Two Floyd County rural districts.	23	0	2	6	7	7	1	0	Examinations were made in 2 rural schools, one 4 miles south of Lockney, the other 12 miles west and 2 miles south of Floydada; 14 of the children stated they had always used water from individual windmill wells located within the borders of their respective school districts.
Three Potter County rural districts.	98	22	8	16	35	16	1	0	Examinations were made in 3 rural schools, located at Bushland, River Road, and Highland Park, respectively, 10 miles west, 6 miles north, and 10 miles east of Amarillo. Sample contains children with a history of continuous residence in the district and others born elsewhere. Water is obtained from individual windmill wells apparently from the first stratum.
Happy (724)	29	5	6	7	5	5	1	0	Although Happy has a municipal water supply installed in 1928, it was not possible to find more than 3 children in the grades examined who had used the city water for at least the past 5 years, many of the inhabitants continuing to use windmill wells. Most of the sample represents children from the immediate rural districts.
Monroe (50)[1]	17	3	6	6	2	0	0	0	Children in this sample stated they had lived continuously either in Monroe or the immediate rural district and had used water from individual windmill wells.
Abernathy (858)	34	9	12	7	4	1	1	0	There is no municipal water supply in Abernathy and sample represents children who stated they had always lived either in Abernathy or in the school district, and who had always used water from individual windmill wells, which vary from 118 to 130 feet in depth.
Wildorado (105)[1]	30	6	10	3	10	1	0	0	This sample represents children from the third, fourth, fifth, sixth, and seventh grades and contains many with both continuous and variable histories. Individual windmill wells are approximately 150 feet deep.
Farnsworth (25)[1]	20	7	2	4	4	3	0	0	Sample represents children in the fourth, fifth, sixth, and seventh grades and includes children from both Farnsworth and the immediate rural district. Water histories in this group vary. Water is obtained from individual windmill wells.

[1] Rand McNally pocket map of Texas, 1934.

TABLE 3.—*Summary of mottled-enamel findings in certain communities of the Panhandle and west Texas with no common water supply. (See two exceptions under "Remarks")*—Continued

COMMUNITIES WHERE WATER FROM CISTERNS IS USED FOR DOMESTIC PURPOSES

City and population (census of 1930)	Total number of children examined	Children classified according to mottled enamel diagnosis							History of water supply and remarks
		Normal	Questionable	Very mild	Mild	Moderate	Moderately severe	Severe	
Jayton (623)	6	6	0	0	0	0	0	0	The 6 examined represent children who had lived in Jayton all their lives and had used continuously water from cisterns for domestic purposes. Afternoon school dismissal of the pupils prevented examination of any additional number. The city has a common water supply, but it is of a type which obviates its use for domestic purposes, and the inhabitants of this town use cistern water for cooking and drinking.
Gail (100)[1]	17	15	1	1	0	0	0	0	Sample represents children from the fourth, fifth, and sixth grades with a history of continuous residence in Gail or nearby rural districts for the major part of their lives. The 1 case of mottled enamel had lived at O'Donnell, an endemic area, from birth to 2 years of age. Water for domestic purposes is obtained from cisterns and occasionally surface sources.
Total	295	73	47	50	71	45	9	0	

DISCUSSION

This survey presents definite evidence that the Panhandle-west Texas region constitutes the largest mottled-enamel area in the United States. There is no doubt that a detailed survey would disclose many additional smaller communities and rural districts where mottled enamel is endemic. Since this territory is generally affected through all gradations from a slight to a marked degree, the influence of the causative factor of mottled enamel is operative over a vast area, with the result that many thousands of the inhabitants are affected.

The area known as the "Llano Estacado" is apparently the most severely affected. From observations made during this survey, the region of the greatest severity centers in and around the city of Lubbock and extends in an easterly direction toward Spur and Post, northward toward Plainview and Amarillo, and southward toward Lamesa. The fact that such large cities as Amarillo, Lubbock, and Plainview are located in the region of the greatest severity makes this a serious problem of keen public-health interest. Although definite manifestations of endemic mottled enamel are readily demonstrable in communities located north of the Canadian River and south of the eastward prolongation of the southern boundary of the State of New Mexico (Edwards Plateau), the type of mottled enamel being developed in these two regions is markedly less severe, the community index generally being slight.

Examination of numerous children, who spent the first 5 or 6 years of their lives in eastern New Mexico, indicates definitely that mottled enamel comparable to that found in west Texas is likewise being developed in eastern New Mexico.

The east central Texas area should be further studied and the boundaries of endemicity determined. Endemic mottled enamel has now been definitely demonstrated in numerous localities between Austin and Dallas. In certain communities, such as Bartlett, Italy, and Frost, a type of mottled enamel is being produced that is comparable in severity with some of the more seriously affected cities and towns of west Texas.

SUMMARY

(A) THE PANHANDLE AND WEST TEXAS

1. The Panhandle-west Texas region constitutes the largest mottled-enamel area in the United States. As a result of the unusual population influx between 1920 and 1930, the number of children affected has correspondingly increased.

2. Of 53 communities surveyed in 37 counties, only 6 could be classified as "negative" or "border line."

3. The fact that the municipal water supplies of such large cities as Amarillo, Lubbock, and Plainview contain the causative factor of

mottled enamel in sufficient concentration to produce this hypoplasia in a high percentage of their children has developed an acute and urgent public health problem.

(B) EAST CENTRAL TEXAS

4. An endemic area of unknown size is reported in east central Texas between Austin and Dallas.

5. Of 13 communities surveyed, only 2 were classified as "border line" and none was classified as "negative."

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(8) Fifteenth Census of the United States; 1930, Vol. 1, Population, Number and Distribution of Inhabitants. Bureau of the Census, Washington, 1931.

OBSERVATIONS ON THE EPIDEMIOLOGY OF LEPROSY IN HAWAII

A study[1] of some of the epidemiological features of leprosy was undertaken in Hawaii because statistics of the certification of leprous persons and of the general population have been recorded for many years, and the modern development of this insularly isolated community seemed to offer a unique opportunity for such researches. Data have been collected and analyzed and investigations have been made in an effort to contribute to the knowledge of the following aspects of the subject: The trend of the local prevalence or incidence; probable age of infection; ratio of the affection in the sexes; degree of communicability; susceptibility of races; relation of contact with infection to the development of the disease; and the correlation of the economic and environmental status of the affected people with the prevalence of the disease among them.

[1] Leprosy: Observations on its epidemiology in Hawaii. By N. E. Wayson and Theodore R. Rhea. Public Health Bulletin No. 212.

The analyses and deductions are based on the records of admissions to segregation during the period of the last 40 years, upon researches into the occurrence of the disease in 400 to 500 family groups, and upon detailed field investigations of the immediate environmental circumstances of approximately 100 of these families.

The average number and rate of annual admissions from both the general and specific populations have declined rather steadily and continuously. In the decade 1890 to 1900 the annual admission rate per thousand among the native Hawaiians was approximately 3.5, while in the quinquennium 1926 to 1930 it was less than 1 per thousand. This specific group lends itself to more accurate study because its total number has not been directly affected by immigration or emigration during this period. The decrease noted has been proportionately greater in the younger age groups, in which formerly the higher admission rates had prevailed; and it is believed that the declining rate of all admissions reflects a diminished incidence of the disease. This suggested decline in the incidence seems to be consequent to, or at least coincidental with, general biological and environmental influences which are put in evidence by falling death rates from other causes rather than as a result of specific control measures. During the past 40 years and just prior to the beginning of that period, there were importations of relatively large numbers of people from localities in which leprosy has been endemic for a long time. These immigrations have directly influenced the racial composition of the population and have probably brought about other biological changes indirectly. It is found that the proportionate distribution of the cases of leprosy among the different races has changed, so that in later years approximately 40 percent of the admissions have come from among the people more recently imported, whereas formerly 90 percent of admissions were of the native people.

The incidence of the disease is somewhat higher in certain racial groups, but no evidence is found of a definite racial susceptibility and the disproportions may apparently be attributed with reason to environmental factors which obtain in the different groups.

Inquiries into the frequency of leprosy within family groups in Hawaii reveal the fact that it is readily communicable and that the percentage of those affected in such groups is often greater than that which was found to occur in clinical pulmonary tuberculosis among certain families studied in the United States. Thus, in a total of 996 members of 122 families, in each of which there was more than 1 child, 302 cases of leprosy were admitted during the past 20 years. This represents more than 30 percent of the total family membership. From 14 of these families in which there were 4 or more children 43 percent of the 137 family members were admitted.

Children who are exposed to leprosy when they are younger than 15 years of age are found to be affected more frequently than those individuals who are older when exposed; and the readiness with which they or others develop the disease seems to be influenced by their age at the time of exposure, the period of time through which the exposure prevails, and the intimacy of the exposure. These deductions are supported by the facts that, among 71 families from which a parent or child was admitted with leprosy during the past 15 years, there were 72 children of the age of 0–4 years remaining after the original case was admitted, and 44.4 percent of those children remaining were subsequently admitted; of 64 children of the age of 5–9 years remaining, 32.8 percent were admitted subsequently; of 50 children of the age of 10–14 years remaining, 22 percent were subsequently admitted; and of 27 children of the age of 15–19 years remaining, 11.1 percent were subsequently admitted. After reviewing the statistics of all admissions and the clinical experiences in Hawaii, it appears probable that 40 percent or more of those who develop the disease were infected before reaching 15 years of age.

The rates of admission point to a ratio of infection of about 1 female to 1.5 males.

The incidence of leprosy is higher in the rural sections than in the urban districts; and in the former locations a lower average economic, sanitary, and dietary status prevails among the affected families and a greater frequency of contact with cases occurs within them.

The average economic status of approximately 100 families in which leprosy has occurred is found to be low when measured by local relief standards, and their average dietary is chiefly that of carbohydrates, is low in milk and meat proteins and butter fat, and seemingly low in calcium and vitamins B and C, when comparisons are made with standards regarded as adequate in Hawaii and in continental United States. No direct correlation, however, between the rate of leprosy and these conditions has been determined among this group of families.

DEATHS DURING WEEK ENDED MAR. 1935

[From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended Mar. 9, 1935	Corresponding week, 1934
Data from 86 large cities of the United States:		
Total deaths	9,080	9,451
Deaths per 1,000 population, annual basis	12.7	13.2
Deaths under 1 year of age	655	687
Deaths under 1 year of age per 1,000 estimated live births	60	64
Deaths per 1,000 population, annual basis, first 10 weeks of year	12.9	12.7
Data from industrial insurance companies:		
Policies in force	67,519,370	67,571,251
Number of death claims	15,131	15,707
Death claims per 1,000 policies in force, annual rate	11.7	12.1
Death claims per 1,000 policies, first 10 weeks of year, annual rate	10.9	11.0

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended Mar. 16, 1935, and Mar. 17, 1934

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Mar. 16, 1935, and Mar. 17, 1934

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Mar. 16, 1935	Week ended Mar. 17, 1934	Week ended Mar. 16, 1935	Week ended Mar. 17, 1934	Week ended Mar. 16, 1935	Week ended Mar. 17, 1934	Week ended Mar. 16, 1935	Week ended Mar. 17, 1934
New England States:								
Maine	1		15	1		30	0	0
New Hampshire					14	223	0	0
Vermont		1			1	54	0	0
Massachusetts	4	13			338	2,003	2	0
Rhode Island	2				64	5	0	0
Connecticut		6	9	15	878	38	0	1
Middle Atlantic States:								
New York	25	35	[1] 12	[1] 29	2,627	1,223	17	2
New Jersey	20	13	25	13	1,106	514	2	3
Pennsylvania	51	59			5,234	3,697	3	2
East North Central States:								
Ohio	60	38	149	144	1,148	1,384	13	2
Indiana	11	22	20	57	453	435	0	1
Illinois	61	28	70	37	3,202	1,419	25	4
Michigan	15	10	5	5	3,447	86	1	1
Wisconsin	6	7	77	55	2,068	1,307	5	2
West North Central States:								
Minnesota	1	5		2	1,599	224	3	0
Iowa	10	6	46	7	1,305	160	0	1
Missouri	29	48	172	153	892	1,010	18	1
North Dakota	2	10	3	29	170	173	0	1
South Dakota	8	2		6	56	478	0	0
Nebraska	5	3		9	660	257	4	0
Kansas	7	15	14	1	1,379	255	3	0
South Atlantic States:								
Delaware		3			8	181	0	0
Maryland [2]	4	10	34	25	59	776	5	0
District of Columbia	6	8	2		49	606	9	0
Virginia	26	21			1,081	1,697	6	7
West Virginia	19	14	254	55	506	45	8	1
North Carolina	15	16	55	61	699	3,369	2	1
South Carolina	2	17	334	757	46	572	1	0
Georgia [3]	11	11	225			1,490	0	1
Florida	4	2	29	7	100	235	1	0

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Mar. 16, 1935, and Mar. 17, 1934.—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Mar. 16, 1935	Week ended Mar. 17, 1934	Week ended Mar. 16, 1935	Week ended Mar. 17, 1934	Week ended Mar. 16, 1935	Week ended Mar. 17, 1934	Week ended Mar. 16, 1935	Week ended Mar. 17, 1934
East South Central States:								
Kentucky	10	25	78	69	605	481	2	1
Tennessee	15	12	226	161	115	1,425	5	5
Alabama [3]	10	9	303	125	373	832	2	1
Mississippi [3]	1	8					1	0
West South Central States:								
Arkansas	3	3	106	35	37	374	0	0
Louisiana [3]	26	26	18	8	241	293	0	1
Oklahoma [4]	4	10	198	78	278	1,025	5	1
Texas [3]	46	113	737	652	155	3,106	4	6
Mountain States:								
Montana	8	1	145		273	18	1	0
Idaho		5			70	74	0	0
Wyoming	1				100	54	0	0
Colorado		5			893	214	0	0
New Mexico	7	5	26	2	35	124	3	0
Arizona	1		53	31	38	55	2	0
Utah [3]					19	608	0	0
Pacific States:								
Washington	4	2	1		221	155	0	0
Oregon		3	83	87	168	70	2	0
California	38	26	215	48	885	1,363	4	3
Total	579	676	3,744	2,764	33,695	34,217	159	49

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Mar. 16, 1935	Week ended Mar. 17, 1934	Week ended Mar. 16, 1935	Week ended Mar. 17, 1934	Week ended Mar. 16, 1935	Week ended Mar. 17, 1934	Week ended Mar. 16, 1935	Week ended Mar. 17, 1934
New England States:								
Maine	0	0	15	25	0	0	2	1
New Hampshire	0	0	20	12	0	0	0	0
Vermont	0	0	20	18	0	0	0	0
Massachusetts	0	0	277	275	0	0	1	1
Rhode Island	0	0	22	14	0	0	0	0
Connecticut	0	0	95	92	0	0	0	0
Middle Atlantic States:								
New York	0	1	1,102	902	0	0	7	10
New Jersey	0	0	190	206	0	0	5	5
Pennsylvania	0	0	643	834	0	0	5	9
East North Central States:								
Ohio	0	1	1,034	978	0	0	1	2
Indiana	0	1	212	229	0	2	0	0
Illinois	1	1	1,227	663	1	3	12	0
Michigan	0	0	427	876	0	11	0	5
Wisconsin	2	1	523	277	26	35	1	0
West North Central States:								
Minnesota	1	0	187	69	13	3	0	0
Iowa	0	0	83	86	0	11	1	0
Missouri	1	0	87	125	4	15	1	1
North Dakota	0	2	105	41	0	4	1	0
South Dakota	0	0	10	13	0	4	0	0
Nebraska	1	0	57	28	41	4	1	5
Kansas	0	0	84	111	8	3	0	1
South Atlantic States:								
Delaware	0	0	27	19	0	0	0	0
Maryland [3]	0	0	95	79	0	0	0	3
District of Columbia	1	0	100	14	0	0	0	0
Virginia	0	1	85	45	0	0	3	2
West Virginia	0	0	126	58	0	0	3	1
North Carolina	1	1	33	42	0	0	0	3
South Carolina	0	0	4	5	0	0	0	3
Georgia [3]	0	1	10	6	2	0	0	5
Florida	0	1	9	5	0	0	6	4

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Mar. 16, 1935, and Mar. 17, 1934.—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Mar. 16, 1935	Week ended Mar. 17, 1934	Week ended Mar. 16, 1935	Week ended Mar. 17, 1934	Week ended Mar. 16, 1935	Week ended Mar. 17, 1934	Week ended Mar. 16, 1935	Week ended Mar. 17, 1934
East South Central States:								
Kentucky	1	1	24	108	0	0	3	3
Tennessee	0	0	33	29	0	2	2	4
Alabama [1]	0	1	13	12	2	0	1	3
Mississippi [2]	0	0	6	25	1	0	2	8
West South Central States:								
Arkansas	0	0	6	8	1	2	0	1
Louisiana [2]	1	0	30	24	1	5	8	10
Oklahoma [4]	0	0	18	10	0	3	2	5
Texas [3]	1	0	84	133	7	35	12	10
Mountain States:								
Montana	0	0	11	18	0	0	0	2
Idaho	0	0	5	2	0	3	0	0
Wyoming	0	0	8	7	7	0	0	0
Colorado	0	0	307	26	6	15	1	0
New Mexico	0	0	7	20	4	2	2	3
Arizona	0	0	24	20	1	0	0	0
Utah [2]	0	0	94	6	7	0	0	0
Pacific States:								
Washington	0	1	52	60	25	11	2	1
Oregon	1	0	66	31	4	10	3	2
California	9	6	269	207	8	17	4	5
Total	21	20	7,966	6,893	169	200	92	118

[1] New York City only.
[2] Week ended earlier than Saturday.
[3] Typhus fever, week ended Mar. 16, 1935, 10 cases, as follows: Georgia, 1; Alabama, 2; Louisiana, 1; Texas, 6.
[4] Exclusive of Oklahoma City and Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
February 1935										
Connecticut	2	16	103	----	2,633	----	0	221	0	3
Delaware	----	6	8	----	6	----	0	74	1	0
District of Columbia	27	67	18	----	39	----	2	150	0	5
Indiana	12	152	407	----	2,107	----	2	1,069	14	6
Iowa	10	33	435	----	5,640	----	3	372	12	6
Minnesota	8	40	107	----	8,924	----	1	552	17	1
Nebraska	21	35	37	----	1,827	----	3	154	165	0
New Jersey	6	65	98	----	2,113	----	1	581	0	3
New Mexico	4	28	352	----	81	----	1	79	3	12
North Carolina	13	75	883	----	3,058	5	1	135	0	5
South Carolina	6	95	3,575	191	138	45	1	24	0	6
Tennessee	39	64	1,654	22	148	4	2	151	1	8

Summary of monthly reports from States—Continued

February 1935

	Cases
Actinomycosis:	
South Carolina	1
Conjunctivitis:	
Connecticut	1
New Mexico	2
Chicken pox:	
Connecticut	622
Delaware	45
District of Columbia	240
Indiana	526
Iowa	196
Minnesota	326
Nebraska	222
New Jersey	1,753
New Mexico	114
North Carolina	417
South Carolina	51
Tennessee	153
Dengue:	
South Carolina	4
Diarrhea:	
South Carolina	138
Dysentery:	
Connecticut (amoebic)	1
Connecticut (bacillary)	4
Minnesota (amoebic)	8
New Jersey (amoebic)	2
New Mexico (unspecified)	9
New Mexico (bacillary)	8
Tennessee:	5
Epidemic encephalitis:	
Indiana	1
Iowa	1
Minnesota	2
New Jersey	9
South Carolina	3
Food poisoning:	
New Mexico	1
German measles:	
Connecticut	124
Delaware	2
Iowa	37

February 1935—Continued

	Cases
German measles—Con.	
New Jersey	594
New Mexico	293
North Carolina	25
Tennessee	4
Hookworm disease:	
South Carolina	31
Impetigo contagiosa:	
Iowa	2
Tennessee	2
Mumps:	
Connecticut	220
Delaware	28
Indiana	69
Iowa	776
Nebraska	225
New Jersey	417
New Mexico	58
South Carolina	287
Tennessee	84
Ophthalmia neonatorum:	
Minnesota	1
New Jersey	6
South Carolina	9
Tennessee	5
Paratyphoid fever:	
Connecticut	1
New Jersey	2
Tennessee	1
Puerperal septicemia:	
New Mexico	6
Tennessee	2
Rabies in animals:	
Indiana	38
New Jersey	4
South Carolina	62
Rabies in man:	
Indiana	1
Scabies:	
Tennessee	16

February 1935—Continued

	Cases
Septic sore throat:	
Connecticut	15
Iowa	4
Minnesota	3
Nebraska	7
New Mexico	3
North Carolina	8
Tennessee	13
Trachoma:	
New Mexico	1
North Carolina	1
Trichinosis:	
Iowa	1
Minnesota	1
Tularaemia:	
North Carolina	3
Tennessee	4
Typhus fever:	
North Carolina	2
South Carolina	4
Undulant fever:	
Connecticut	3
Delaware	4
Iowa	5
Minnesota	5
New Jersey	1
North Carolina	2
South Carolina	2
Tennessee	1
Vincent's infection:	
Tennessee	5
Whooping cough:	
Connecticut	279
Delaware	22
District of Columbia	10
Indiana	150
Iowa	47
Minnesota	162
Nebraska	23
New Jersey	1,440
New Mexico	87
North Carolina	1,246
South Carolina	139
Tennessee	228

CASES OF VENEREAL DISEASES REPORTED FOR JANUARY 1935

This statement is published monthly for the information of health officers in order to furnish current data as to the prevalence of the venereal diseases. The figures are taken from reports received from State health officers. They are preliminary and are, therefore, subject to correction. It is hoped that the publication of these reports will stimulate more complete reporting of these diseases.

State	Syphilis		Gonorrhea	
	Cases reported during month	Monthly case rates per 10,000 population	Cases reported during month	Monthly case rates per 10,000 population
Alabama [1]				
Arizona	42	.93	133	2.94
Arkansas	442	2.36	128	.68
California	1,640	2.71	1,388	2.29
Colorado [1]				
Connecticut	234	1.42	154	.94
Delaware	197	8.17	32	1.33
District of Columbia	151	3.05	122	2.46
Florida	574	3.69	64	.41
Georgia	365	1.25	282	.97
Idaho	0		0	
Illinois	1,305	1.67	1,291	1.65
Indiana	204	.62	212	.64
Iowa	148	.60	172	.69
Kansas	155	.82	74	.39
Kentucky	199	.75	293	1.11
Louisiana	186	.86	106	.49
Maine	67	.84	49	.61
Maryland	811	4.88	259	1.56
Massachusetts	410	.95	468	1.09

See footnotes at end of table.

Cases of venereal diseases reported for January 1935—Continued

State	Syphilis		Gonorrhea	
	Cases reported during month	Monthly case rates per 10,000 population	Cases reported during month	Monthly case rates per 10,000 population
Michigan	546	1.08	547	1.08
Minnesota	303	1.17	244	.94
Mississippi	1,070	5.23	1,703	8.32
Missouri	704	1.92	460	1.25
Montana	28	.52	21	.39
Nebraska	47	.34	87	.63
Nevada [1]				
New Hampshire [2]				
New Jersey	510	1.22	246	.59
New Mexico	74	1.71	36	.83
New York	5,493	4.24	1,624	1.25
North Carolina	931	2.84	296	.90
North Dakota	20	.29	56	.82
Ohio	777	1.14	213	.31
Oklahoma	162	.78	121	.58
Oregon	71	.72	80	.81
Pennsylvania	321	.33	283	.29
Rhode Island	98	1.40	112	1.60
South Carolina	315	1.80	414	2.37
South Dakota	5	.07	38	.54
Tennessee	1,010	3.79	560	2.10
Texas	184	.31	46	.08
Utah [1]				
Vermont	19	.53	29	.80
Virginia [3]	303	1.24	236	.97
Washington	220	1.38	216	1.35
West Virginia [3]				
Wisconsin [4]	38	.13	111	.37
Wyoming [1]				
Total	20,379	1.72	13,006	1.10

[1] Not reporting.
[2] Has been reporting regularly but no report received for current month.
[3] Incomplete.
[4] Only cases of syphilis in the infectious stages are reported.

NOTE.—Surveys in which all medical sources have been contacted in representative communities throughout the United States have revealed that the monthly rate per 10,000 population is 6.6 for syphilis and 10.2 for gonorrhea.

WEEKLY REPORTS FROM CITIES

City reports for week ended Mar. 9, 1935

[This table summarizes the reports received regularly from a selected list of 121 cities for the purpose of showing a cross section of the current urban incidence of the communicable diseases listed in the table. Weekly reports are received from about 700 cities, from which the data are tabulated and filed for reference]

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Maine:											
Portland	0	1	0	1	4	4	0	0	0	7	31
New Hampshire:											
Concord	0	------	0	0	1	2	0	0	0	0	16
Nashua	0	------	0	0	0	0	0	0	0	0	0
Vermont:											
Barre	0	------	0	0	0	0	0	0	0	0	3
Burlington	0	------	0	29	0	9	0	0	0	0	9
Massachusetts:											
Boston	4	------	0	25	27	44	0	0	0	25	239
Fall River	0	------	0	70	3	1	0	1	0	8	32
Springfield	0	------	0	159	1	6	0	1	0	24	31
Worcester	0	------	0	1	10	13	0	2	0	13	56
Rhode Island:											
Pawtucket	0	------	0	0	0	0	0	0	0	0	19
Providence	0	------	1	58	7	13	0	1	0	8	55
Connecticut:											
Bridgeport	2	------	2	1	1	16	0	1	0	0	38
Hartford	0	------	0	90	0	6	0	1	0	10	------
Haven	0	------	1	222	6	0	0	2	0	0	47

City reports for week ended Mar. 9, 1935—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
New York:											
Buffalo	0	----	1	267	26	29	0	7	0	24	166
New York	18	20	8	702	161	630	0	122	3	247	1,632
Rochester	0	----	0	275	5	18	0	2	0	22	73
Syracuse	0	----	1	124	6	6	0	1	1	32	59
New Jersey:											
Camden	2	5	0	0	4	4	0	1	0	5	47
Newark	0	----	1	241	9	23	0	5	0	76	111
Trenton	0	----	0	28	5	9	0	1	0	3	39
Pennsylvania:											
Philadelphia	4	7	6	10	51	111	0	29	0	91	531
Pittsburgh	1	9	1	737	47	37	0	3	0	29	179
Reading	0	----	0	15	1	5	0	1	0	2	25
Scranton	0	----	----	377	----	2	0	----	0	6	----
Ohio:											
Cincinnati	7	----	4	3	21	34	0	9	0	2	151
Cleveland	8	56	0	247	19	40	0	14	0	58	216
Columbus	12	1	1	117	7	39	0	4	0	1	88
Toledo	0	----	0	49	8	13	0	3	0	4	73
Indiana:											
Fort Wayne	1	----	0	22	2	2	0	1	0	0	29
Indianapolis	1	----	0	38	21	37	0	4	0	0	----
South Bend	0	1	1	10	2	5	0	0	0	0	23
Terre Haute	0	----	0	0	0	0	0	0	0	0	23
Illinois:											
Chicago	3	9	8	1,198	65	707	0	39	0	81	592
Springfield	0	----	1	10	1	11	0	0	0	1	25
Michigan:											
Detroit	7	5	2	800	34	180	0	6	0	99	262
Flint	3	----	0	574	10	11	0	0	0	4	29
Grand Rapids	0	----	0	78	2	10	0	1	0	9	34
Wisconsin:											
Kenosha	0	1	1	323	1	29	0	0	0	8	4
Milwaukee	0	1	1	571	12	234	0	3	0	30	127
Racine	0	1	1	36	0	4	0	0	0	6	10
Superior	0	----	0	298	0	2	0	0	0	1	3
Minnesota:											
Duluth	0	----	0	0	3	3	0	0	0	0	26
Minneapolis	2	----	0	1,192	6	69	0	0	0	13	94
St. Paul	1	1	1	12	9	37	0	0	0	4	67
Iowa:											
Davenport	0	----	----	1	----	1	0	----	0	0	----
Des Moines	4	----	----	66	----	24	0	----	0	0	48
Sioux City	0	----	----	11	----	1	0	----	0	3	----
Waterloo	1	----	----	1	----	5	0	----	0	2	----
Missouri:											
Kansas City	3	2	0	194	14	11	0	4	0	4	96
St. Joseph	1	----	0	7	4	2	0	1	0	1	12
St. Louis	12	----	0	11	8	20	0	5	1	5	184
North Dakota:											
Fargo	0	----	0	----	3	27	0	1	0	4	13
Grand Forks	0	----	----	0	----	1	0	----	0	0	----
South Dakota:											
Aberdeen	0	----	----	9	----	0	0	----	0	4	----
Sioux Falls	0	----	----	0	----	2	0	----	0	0	5
Nebraska:											
Omaha	0	----	2	28	8	9	4	2	0	0	62
Kansas:											
Topeka	----	----	----	----	----	----	----	----	----	----	----
Wichita	0	----	0	337	4	2	0	2	0	2	36
Delaware:											
Wilmington	0	----	0	2	3	13	0	0	0	2	23
Maryland:											
Baltimore	3	16	2	9	35	54	0	16	1	17	241
Cumberland	0	1	1	9	1	2	0	1	0	0	19
Frederick	0	----	0	0	1	2	0	0	0	0	7
District of Columbia:											
Washington	13	3	0	32	26	65	0	16	0	4	175
Virginia:											
Lynchburg	0	----	0	216	1	5	0	0	0	8	11
Norfolk	1	2	0	33	8	3	0	2	0	16	34
Richmond	1	----	4	113	11	3	0	3	1	0	78
Roanoke	0	----	1	20	3	1	0	0	0	3	27
West Virginia:											
Charleston	2	----	0	29	1	1	0	1	0	0	10
Huntington	1	----	----	35	----	3	0	----	0	7	----
Wheeling	0	----	0	97	2	23	0	1	0	8	21

City reports for week ended Mar. 9, 1935—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
North Carolina:											
Raleigh	0		0	1	4	0	0	1	0	0	18
Wilmington	0		0	0	5	1	0	0	0	3	18
Winston-Salem	0	2	0	16	1	1	0	0	0	26	11
South Carolina:											
Charleston	0	11	0	7	5	3	0	3	1	0	29
Columbia	0		0	0	3	0	0	0	0	0	48
Greenville	0		0	0	4	1	0	0	0	0	9
Georgia:											
Atlanta	5	28	3	1	8	4	0	8	0	1	90
Brunswick	0		0	0	0	0	0	0	0	0	6
Savannah	0	18	1	1	0	1	0	1	0	1	36
Florida:											
Miami	2	4	0	1	3	1	0	1	0	3	32
Tampa	2	3	3	2	2	1	0	2	1	0	26
Kentucky:											
Ashland	0	4		2		1	0		0	2	
Lexington	2		0	25	2	0	0	0	0	0	19
Louisville	3	3	0	406	9	29	0	6	0	10	59
Tennessee:											
Memphis	4		4	2	20	6	0	5	0	7	89
Nashville	0		2	2	10	3	0	1	0	8	58
Alabama:											
Birmingham	1	17	5	11	3	4	0	3	0	0	73
Mobile	1		4	0	3	0	0	1	0	0	25
Montgomery	0			24		0	0		0	2	
Arkansas:											
Fort Smith											
Little Rock	1		0	19	1	0	0	1	0	0	3
Louisiana:											
New Orleans	22	10	7	7	26	9	0	10	0	0	162
Shreveport	0		0	12	10	2	1	2	0	0	47
Texas:											
Dallas	5	2	2	0	10	0	0	4	0	1	74
Fort Worth	0		2		9	6	0	0	0	0	54
Galveston	0		0	0	1	2	0	0	0	0	19
Houston	3		2	2	9	2	3	6	1	0	93
San Antonio	4		8	1	11	1	0	5	0	0	69
Montana:											
Billings	4		0	0	0	3	0	0	0	0	12
Great Falls	0		0		0	0	0	0	0	2	3
Helena	0		0	76	1	1	0	0	0	0	3
Missoula	0		0		1	0	0	1	0	1	11
Idaho:											
Boise	0		0	2	1	0	0	0	0	0	4
Colorado:											
Denver	5	39	0	332	7	200	1	6	0	4	74
Pueblo	0		0	114	1	2	0	1	0	9	7
New Mexico:											
Albuquerque	0		1	5	2	2	0	1	0	12	15
Utah:											
Salt Lake City	0		1	16	2	82	0	1	0	43	35
Nevada:											
Reno	0		0	0	1	2	0	0	0	0	4
Washington:											
Seattle	0			50		8	4		0	2	
Spokane	0		0	113	5	3	0	1	0	0	49
Tacoma	0		0	8	4	3	11	0	0	0	24
Oregon:											
Portland	0		0	58	5	11	0	2	0	1	98
California:											
Los Angeles	17	80	3	27	17	75	1	17	0	9	347
Sacramento	4		0	26	3	7	0	2	1	0	28
San Francisco	0	2	0	13	7	29	0	9	0	10	166

City reports for week ended Mar. 9, 1935—Continued

State and city	Meningococcus meningitis		Poliomyelitis cases
	Cases	Deaths	
Massachusetts:			
Boston	1	1	0
Connecticut:			
New Haven	1	0	0
New York:			
New York	13	3	1
Pennsylvania:			
Philadelphia	1	2	0
Pittsburgh	3	2	0
Ohio:			
Cincinnati	7	1	1
Cleveland	4	2	0
Toledo	0	1	0
Indiana:			
Indianapolis	1	0	0
Illinois:			
Chicago	14	10	0
Wisconsin:			
Milwaukee	0	1	0
Minnesota:			
Minneapolis	1	1	0
Iowa:			
Des Moines	2	0	0
Missouri:			
Kansas City	1	0	0
St. Louis	4	2	0
Nebraska:			
Omaha	0	2	0
Maryland:			
Baltimore	1	2	0
District of Columbia:			
Washington	11	6	0
Virginia:			
Lynchburg	1	0	0
Georgia:			
Atlanta	1	0	0
Kentucky:			
Louisville	2	0	0
Tennessee:			
Memphis	1	0	0
Alabama:			
Birmingham	2	0	0
Louisiana:			
New Orleans	3	0	0
Texas:			
Dallas	0	1	0
Fort Worth	1	0	0
Colorado:			
Denver	0	0	1
New Mexico:			
Albuquerque	1	1	0
Utah:			
Salt Lake City	1	1	0
Washington:			
Seattle	0		1
Spokane	0	1	0
California:			
Los Angeles	0	0	7

Dengue.—Miami, 1 case.
Epidemic encephalitis.—Cases: New York, 3; Pittsburgh, 1; Cleveland, 2.
Pellagra.—Cases: Savannah, 3; Birmingham, 1; New Orleans, 1; Los Angeles, 1; San Francisco, 1.

FOREIGN AND INSULAR

MEXICO

Smallpox.—A report dated March 15, 1935, states that smallpox has been reported in Mexico, as follows: During the week ended January 26, 1935, 1 case was reported in the city of Juarez. In the city of Chihuahua, Chihuahua State, 3 cases of smallpox were reported during January 1935, 6 cases during February, and 11 cases during March. Deaths from smallpox were reported during January 1935, as follows: 1 at Saucillo, 2 at Guadalupe, 1 at Carichic, 2 at Batopilas, 1 at Cienega de Ortiz, and 3 at Neoqui. During the month of February 1935 a total of 17 deaths was reported as follows: 3 at Cienega de Ortiz, 5 at Neoqui, and 9 at Villadama. Intense vaccination is being carried on, the entire population of Oja Caliente, Chihuahua State, being vaccinated.

116610°—35——3

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, International Office of Public Hygiene, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. The reports contained in the following table must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

CHOLERA

[C indicates cases; D, deaths; P, present]

Place		July 29–Aug. 25, 1934	Aug. 26–Sept. 29, 1934	Sept. 30–Oct. 27, 1934	Oct. 28–Nov. 24, 1934	Week ended— December 1934 1	8	15	22	29	January 1935 5	12	19	26	February 1935 2	9	16	23
Ceylon:																		
Colombo	C																16	6
	D																12	5
Peliyagoda	C																10	
	D																6	
China: Shanghai	C	1																
India	C	58,347	53,096	19,160	16,176	5,069	5,640	2,974	1,962	1,191	4,425	3,772	4,043					
	D	29,499	26,643	9,524	8,559	2,547	2,829	1,497	1,009	570	2,284	2,005	2,090					
Assam	C			43	327	105	243	297										
	D				133	64	83	127										
Bassein	C					1	1	4	5	4	2	2	2	2	1	1	2	2
	D							2	4	3	2	3	1	3		1	2	1
Bombay Presidency	C	11,364	5,974	1,973	872	205	181	117	56	33	26	28	21	15	19			
	D	4,125	2,355	925	383	70	88	50	31	17	16	12	13	4	8			
Bombay	C	1	2															
Calcutta	C	182	183	110	78	25	10	46	36	49	53	30	30	61	96	151		179
Chittagong	C	2	1	1	1	1	3	3	1	4							2	2
Madras Presidency	C	6,883	3,647	1,098	1,901	996		2,452		1,709	1,394	1,553	2,109					
	D	3,184	1,695	526	895	469		1,201		799	705	911	1,114					
Madras	C	145	60	7	59	3	3	8	5	8	2	5	9	9	3	2	1	
	D	55	29	5	32	1		3	4	4	1	5	4	7	1	1	1	
Porto Novo	C								P									
Moulmein	C													1	7		11	8
Negapatam	C				1							12				1		1
Punjab	C		35															
	D		25															
Rangoon	C		1			1						2	1	18	10	7	10	7
Tuticorin	C												1					
Vizagapatam	C	4	6															

India (French):																		
Chandernagor	D		1	1														
Karikal	C	16	47	5	2				4	7	11	15	2	27	15	2		
Pondichery	C	106	59		10		2	3	3	21	4	6	19	21	4	4		
Indo-China (see also table below):																		
Kandal	C											2						
Pnom-Penh	C	2						1	1							1		
Siam.[1]																		
On vessels:																		
S. S. *Erinpura* at Port Swettenham	C	1																
S. S. *Aronda* at Rangoon from Calcutta	C		1															
S. S. *Ellenga* at Rangoon from Calcutta	C										1							
S. S. *Tilawa* at Cocanada	C															[2] 1		

[1] Cholera has been reported in Siam as follows: For the week ended Mar. 2, 1935, 13 cases with 2 deaths at Roy Ech, Nagara Rajsima; for the week ended Mar. 9, 1935, 1 case at Bangkok, Siam.
[2] Suspected.

Place		September 1934			October 1934			November 1934			December 1934			January 1935	
		1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20
Indo-China (French) (see also table above):															
Cambodia [1]	C				1			3							
	D				1			3							
Cochin-China [1]	C			1				1	2						1
	D			1				1	2						1

[1] Reports incomplete.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE[1]

[C indicates cases; D, deaths; P, present]

Place		July 29–Aug. 25, 1934	Aug. 26–Sept. 29, 1934	Sept. 30–Oct. 27, 1934	Oct. 28–Nov. 24, 1934	Week ended— December 1934 1	8	15	22	29	January 1935 5	12	19	26	February 1935 2	9	16	23
Argentina (see also table below): Santiago de Estero Province—Frias	C						1											
Azores. (See table below.)																		
Belgian Congo	C				14						1	2	1					
Brazil:																		
Alagoas State	C							5										
	D							2										
Ceara State	C						2											
British East Africa (see also table below):																		
Kenya	C	5	13	1	5	1	3				17							
Uganda	C	101	70	89	79	33	13	16	38	22	17	14	26	22	9	16		
	D	101	69	85	75	34	13	16	33	18	17	12	25	22	9	16		
Canary Islands: Las Palmas	C												1					
Ceylon: Colombo	C		1		2					1					1	1		
	D				2	1										2		
Plague-infected rats			1		3													
China (see also table below):																		
Amoy.[2]																		
Kangping.[3]																		
Manchuria [4]	D	8																
Mansantun [5]	D									4								
Dutch East Indies:																		
Cheribon	C																	[6] 1
Java—Batavia	C			5														
	D			5														
West Java	C	1,721	2,201	1,684	1,658	478	502	517	631									
	D	1,720	2,201	1,684	1,658	478	502	517	626									
Ecuador:																		
Celica	C																[7] 16	
Pungala and Tixan (near)	C																[7] 14	
Egypt:																		
Alexandria—Plague-infected rats		P	P	P	P		P		P		P		P		P			
Asyut	C				2													
Beni-Suef	C				1													
Girga	C													1	1			
Hawaii Territory:																		
Hawaii Island—Hamakua district—Kalopa—Plague-infected rats				1	3													
Paauhau	C				1													
	D				1													

Plague-infected rats				1														
Pohakea—Plague-infected rats				1														
Maui Island—Makawao district—																		
Kahului[6] (9 miles from)—Plague-infected rats				2														
Paia—Plague-infected rats				1														
India	C	3,032	6,640	5,642	4,167	1,059	964	817	865	844	2,159	1,212	1,671					
	D	1,777	3,981	3,114	2,424	597	587	521	532	638	1,300	649	721					
Bassein	C	5	1	2	3					1						1		
Plague-infected rats		3	3	1														
Bombay Presidency	C	1,464	2,929	2,759	2,093	372	300	220	225	214	232	300	251	291	360			
	D	842	1,760	1,626	1,109	230	176	134	146	137	138	165	148	152	179			
Bombay	C		1										1					
Plague-infected rats			2	1														
Madras Presidency	C	333	553	309	230	119		63		76	60	58	79					
	D	165	296	183	92	63		24		40	20	31	35					
Moulmein	C	1																
	D	1																
Punjab	C			29	53	10	17	8	11	13	9	5	11	7	14	18	85	30
	D			17	35	8	13	7	6	11	5	2	5	7	9	10	25	17
Rangoon	C	1	3								1					[9]1		
Plague-infected rats		1				1												
Indo-China (see also table below):																		
Bentre	C	1																
Kandal	C											1						
Pnom-Penh	C	1	3	2	1			1	1									
Saigon and Cholon	C	1	1		2													
Madagascar. (See table below.)																		
Morocco: Tangier	C				7													
Peru. (See table below).																		
Senegal. (See table below.)																		
Siam:																		
Prachin—Nagara Nayok	C									4								
Nagara Rajsima	C																1	
Rajpuri	C										1							
South-West Africa.[9]																		
Union of South Africa: Orange Free State	C			3	3			1	2						[10]39			
On vessel: S. S. *Barjora* at Rangoon from Moulmein	C		1															
	D		1															

[1] Including plague in the United States and its possessions.
[2] During the week ended Mar. 2, 1935, 1 fatal imported case of plague was reported at Amoy, China.
[3] A report dated Jan. 29, 1935, states that up to Jan. 23, 79 cases of plague with 78 deaths were reported near Kangping, China: the reports also states that up to Jan. 21, 50 deaths from plague were reported in 6 villages of the Pe Wang Fu District, northwest of Kangping.
[4] A report dated Oct. 30, 1934, states that from June to Oct. 25, 1934, deaths from plague had been reported in Manchuria, China, as follows: Fengtien Province—Liaoyuan 30, Shuangshan 21, Tungliao 41, Kirin Province—Changling 12, Chienan 26, Fuyu 32, Hsinking City 1, Nungan 168.
[5] Up to Jan. 5, 1935, 44 cases of plague with 35 deaths were reported at Mansantun, Manchuria, China.
[6] Imported.
[7] For 2 weeks.
[8] During the week ended Mar. 9, 1935, 1 plague-infected rat was reported 10 miles from Kahului, Makawao district, Maui Island, Hawaii Territory.
[9] From January to Oct. 31, 1934, 33 cases of plague were reported in Ovamboland, South-West Africa.
[10] For 4 weeks.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place		August 1934	September 1934	October 1934	November 1934	December 1934	January 1935
Argentina (see also table above)	C	6	11				
Azores	C	5	2		1	1	
British East Africa (see also table above):							
Kenya	C	13	5	1	6		
Uganda	C	103	54				
China: Kwangchowan	C	3			3		
	D	3			3		
Indo-China (see also table above):							
Cambodia	D	3	3	4	4	2	1
Cochin-China	C	2	1		2		
Madagascar (central region)	C	160	291	444	431	381	
	D	158	283	422	410	364	
Peru	C	1			2	5	5
Lima department	C		2	3	1	1	1
Senegal:							
Dakar [11]	C	52	17	13	4	2	2
	D	47	19	11	3	2	2
Diourbel [11]	C	5	1				
	D	3	1				
Rufisque [11]	C	42	18	8	4		1
Theis [11]	C	39	6	6			
Tivaouane [11]	C	82	26	21	3	1	

[11] Reports incomplete.

SMALLPOX

[C indicates cases; D, deaths; P, present]

Place		July 29–Aug. 25, 1934	Aug. 26–Sept. 29, 1934	Sept. 30–Oct. 27, 1934	Oct. 28–Nov. 24, 1934	Week ended— December 1934 1	8	15	22	29	January 1935 5	12	19	26	February 1935 2	9	16	23
Algeria:																		
Algiers Department	C			1												1		
Constantine Department	C		1	1														
Angola. (See table below.)																		
Belgian Congo (see also table below)	C	2	5		102									5				
Bolivia. (See table below.)																		
Brazil:																		
Porto Alegre (alastrim)	C	5	2	1														
Recife	C							1										
Sergipe State	C				P													

British East Africa:																			
Kenya	C	169	116	30	17	5	5	1		2									
Tanganyika	C	6	43	18	14	20	19	15	5	4				2					
British Somaliland	C		7	7	5									8	11				
British South Africa:																			
Northern Rhodesia	C		16																
Southern Rhodesia	C	2	1	2		1													
Canada:																			
Alberta	C				2	1													
British Columbia	C	[1] 1																	
Manitoba	C		[1] 1	[1] 1															[1] 1
Ontario	C																		
Saskatchewan	C			2	1														
Canary Islands: Santa Cruz de Tenerife	C					2	1												
Ceylon:																			
Colombo	C		17	3	11		10	1	1		1	1	10	3	1				
Welitara.[2]																			
China:																			
Amoy	C	3			1						1								
Canton	C				3		2	3		4	1	3	2	1	3	1	2		
Dairen	C		2			1				1		4							
Foochow	C	P	P	P	P	P		P		P		P		P		P			
Hankow	C		1	1	1	1	1	1	4	9	10	5	4		10	2	1		
Hong Kong	C		1		2				1	1	1	2	1	4	1	5	2	1	
Macao	D				3	4	10	4	15	10	12	17	13	5	12	12	20	9	
Nanking	C							1					1		1				
Shanghai	C	3	1	2	1		2	3	1	2					2	1		1	
Swatow	C	1																	
Tientsin	C			2	3	1	1	3		2	1	2	2	1	3				
Tsingtao	C	1		1	3					2		9	1	1					
Chosen. (See table below.)																			
Colombia	C											[1] 11			20	1			
Dahomey. (See table below.)																			
Dutch East Indies: Bali	C													4					
Ecuador. (See table below.)																			
Egypt:																			
Alexandria	C	2																	
Cairo	C	4	1												56	18			
Dakahliya	C																		
Faiyum	C		1																
Minya	C	3	2																
Sharkiya	C			74															
Provinces	C	31	13	46	3				2				2	2					
Eritrea	C	1																	
Formosa	C											P							
France. (See table below.)																			
French Somaliland	C												5	6	6	6	2	2	

[1] For 2 weeks.

[2] A report dated Mar. 7, 1935, states that from Jan. 31, 1935, 20 cases of smallpox were reported at Welitara, Ceylon.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		July 29–Aug. 25, 1934	Aug. 26–Sept. 29, 1934	Sept 30–Oct. 27, 1934	Oct. 28–Nov. 24, 1931	Week ended— December 1934 1	8	15	22	29	January 1935 5	12	19	26	February 1935 2	9	16	23
Great Britain:																		
England and Wales	C		1	1	1												•	
London	C			1														
London and Great Towns	C		1	1														
Greece: Salonika	C	8		3							1							
Guatemala. (See table below.)																		
Honduras:																		
Tegucigalpa	C	4	2															
Tela	C						5	1	1		1		1			5		3
India	C	12,684	8,838	4,421	7,163	2,782	3,147	3,473	3,544	4,136	4,404	4,951	6,564					
	D	3,269	2,108	846	1,431	509	920	862	883	1,015	1,104	1,210	1,483					
Bassein	C	1												1				
	D	1												2				
Bombay Presidency	C	1,134	1,102	628	1,245	413	473	602	787	559	704	1,150	1,316	1,646	1,879			
	D	237	200	132	204	67	113	107	149	142	173	242	288	316	387			
Bombay	C	4	14	8	5		4	1	8	9	7	28	23	29	56	46	75	58
	D	3	6	5	4		2		3	6	5	12	15	9	35	22	25	32
Calcutta	C	7	16	3	4		5	10	22	18	14	12	19	34	20	42	35	73
	D	8	9		1		3	5	15	9	10	9	11	22	16	25	17	45
Chittagong	C																[3] 1	
Cochin	C												2		4			2
Karachi	C	6	3						4	3		6		5	4	8	9	11
Madras Presidency	C	3,397	2,920	2,708	2,753	989		950		788	974	1,140	1,656					
	D	616	515	414	446	132		153		123	166	162	221					
Madras	C	19	22	16	5		7	8	2	2	5	7	12	12	14	11	16	7
Moulmein	C																[3] 1	
Negapatam	C	4	3	8	3		2	10	2	10	9	10	6	8	10	14	8	11
Punjab	C			5	60	21	80	38	86	50	127	43	73	36	52	41	64	36
Rangoon	C	3	2	3	3		1			2	2	2	10	10	8	34	27	8
Tuticorin	C		3	2			2	1					3	1				
Vizagapatam	C	8	1		16		11	8	5	4	54	4	11	23	29	38	23	43
India (French).																		
Chandernagor	D	2	1															
Karikal	C		1	1	1	2		1	1	9		3		6		3		
Mahe	D				3													

Pondichery	C	170	236	99	89	34	30	7	34	27	30	17	21	23	25	24		
	D	103	147	81	45	22	31	6	20	20	20	17	16	17	20	24		
India (Portugese)	C	27																
Indo-China (see also table below):																		
Haiphong	C		1								1							
Pnom-Penh	D	1																
Tourane	C	9	3	4	3	1			1	3	1	1				1	1	3
Iraq	C	5	11	3	1	10		8	13	2	20	16		2	2			
Arbil	C		6	2		1				2		1			2			
Baghdad	C	2	[1]1	1														
Basra	C						1		5									
Mosul Ilwa	C											7		2				
Italy:																		
Genoa	C	8	2															
Milan	C		2															
Japan	C				1	26	55	33	27									
Kobe	C															1		
Taiwan	D								1	1								
Liberia.[4]																		
Lithuania. (See table below.)																		
Mexico:																		
Allende.[5]																		
Chihuahua	C		1		2	1	2	2	7	5		5	1	1		1	5	2
Mazatlan.[6]																		
Mexico, D. F	C	6	8	6		1			6									
Monterrey	C	1																
San Luis Potosi	D					1												
Teitipac.[6]																		
Morocco. (See table below.)																		
Mozambique. (See table below.)																		
Nigeria	C	239	215	159	115		142	38	74	74	8							
Lagos	C	3	5															
Nyasaland. (See table below.)																		
Palestine	C					1								2		4		
Persia	C	3	2	7	4	1					22	17	21		3			
Teheran	C	1			2	1	1											
	D		1	1	1								1					
Peru. (See table below.)																		
Poland	C		1	1	1													
Portugal (see also table below):																		
Lisbon	C			2	2					1								
Oporto	C		1		1			1										
Portuguese East Africa. (See table below.)																		

[1] For 2 weeks.
[2] A report dated Mar. 7, 1935, states that from Jan. 31, 1935, 20 cases of smallpox were reported at Welitara, Ceylon.
[3] Imported.
[4] A report states that from February to Sept. 10, 1934, 233 cases of smallpox, with 79 deaths, had been reported in Sanoyea, Liberia. All sanitary measures have been taken.
[5] A report dated Dec. 28, 1934, states that about 48 cases of smallpox, with 5 or 6 deaths, had been reported at Allende, Mexico.
[6] A report dated Aug. 27, 1934, states that smallpox has appeared in the suburbs of Mazatlan, Sinaloa, Mexico; the report also states that 104 deaths from smallpox have occurred in Teitipac, Oaxaca, Mexico.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		July 29–Aug. 25, 1934	Aug. 26–Sept. 29, 1934	Sept. 30–Oct. 27, 1934	Oct. 28–Nov. 24, 1934	Week ended— December 1934 1	8	15	22	29	January 1935 5	12	19	26	February 1935 2	9	16	23
Salvador	C	30	12	13	10			[7] 27	1									
Siam	C		32	4	13				20		8	3	12	1				
Bangkok	C												[2] 1					
Sierra Leone	C	80	385	214	[1] 60		[1] 129		[1] 43		[1] 80		[1] 25					
Spain	C	47	29	22	105	7	29	15	14	13	7	4				3	8	
Straits Settlements: Singapore	C			2														
Sudan (Anglo-Egyptian)	C	4	1	1				1		11	2	5	5	1	5	2	1	1
Syria:																		
Beirut	C	2																
Damascus	C				33	26	19		4			6			2			
Provinces	C	32	78	51	116	49	30		18	17	1	18	9		3	1		
Trans-Jordan	C				[2] 1													
Tunisia	C											5						
Turkey. (See table below.)																		
Union of South Africa	C	P	P															
Union of Soviet Socialist Republics. (See table below.)																		

On vessels:

S. S. *Ethiops* at Rangoon from Madras	1 case	Sept.	3, 1934
S. S. *Usuri Maru* at Kobe from Dairen	1 case	Sept.	24, 1934
S. S. *Rohna* at Penang from Madras	1 case	Oct.	4, 1934
S. S. *Erinpura* at Rangoon from Madras	1 case	Oct.	8, 1934
S. S. *Kwang-Si* at Jibuti	1 case	Nov.	24, 1934
S. S. *Varela* at Basra	1 case	Dec.	8, 1934

On vessels—Continued.

S. S. *Talma* at Hong Kong	Present	Jan.	19, 1935
S. S. *Aorangi* at Sydney from Vancouver	1 case	Jan.	24, 1935
S. S. *Hosang* at Singapore from Osaka	1 case	Feb.	2, 1935
S. S. *Mongolia* at Suez from Australia	1 case	Feb.	24, 1935
S. S. *Tatsuta Maru* at San Francisco	1 case	Mar.	14, 1935
S. S. *Tatsuta Maru* at San Francisco	1 case	Mar.	15, 1935

[1] For 2 weeks.
[2] Imported.
[7] For 3 weeks.

Place		August 1934	September 1934	October 1934	November 1934	December 1934	January 1935
Angola	C	65	33				
Belgian Congo (see also table above)	C	204	183	184	110		
Bolivia	C	136	70	72	53	35	
Chosen	C	5	15	40	38	15	
Dahomey	C	31	10	6	1		
Ecuador	C	9	16				
France	C	3	2	3	53	57	31
Guatemala	C	1		2	1	2	
Indo-China (see also table above)	C	150	87	202	259	280	605
	D	39	18	39	22	25	67
Lithuania	C					1	
Morocco	C	2	8			7	5
Mozambique	C	4	6	1	36		
Nyasaland	C	16	29	17	29	13	
Peru	C	100	12	195		36	
Portugal (see also table above)	C	60	36	104	150	99	
	D	6	2	6	27	16	
Portuguese East Africa	C	4	6	1	36		
Turkey	C	4	16	2	2	5	5
Union of Soviet Socialist Republics	C	408					

TYPHUS FEVER

Place		July 29–Aug. 25, 1934	Aug. 26–Sept. 29, 1934	Sept. 30–Oct. 27, 1934	Week ended— November 1934				December 1934					January 1935				February 1935		
					3	10	17	24	1	8	15	22	29	5	12	19	26	2	9	16
Algeria:																				
Algiers Department	C	1		4	2	1	1				2			2	1	1	1	1		
Constantine Department	C	12	5	4					1			8	5	3	4	2	3	3	11	6
Bone	C	1	1														2			
Constantine	C			2				2	1						1				2	1
Oran Department	C	10							1	1										
Basutoland	C		20	46	8	7	6	7	3											
Belgian Congo	C	108	62	20	4	4	1	3		2		2		1	3					
Bolivia. (See table below.)																				
British East Africa: Uganda	C	1			10					1									4	
Bulgaria	C			7			5	2		4	3	4	2			8	2	1		
Chile	C	1,188	1,408	1,614							355									
Concepcion	C		14								5									
Iquique	C			[1] 4																
Santiago	C	185	430							845	86									
Tocopilla	C		1																	
Valparaiso	C	21	21	17	10	9	6	8	16	15	15	8	14	4	11	6	1	5	1	

[1] Imported.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

TYPHUS FEVER—Continued

[C indicates cases; D, deaths; P, present]

Place		July 29–Aug. 25, 1934	Aug. 26–Sept. 29, 1934	Sept. 30–Oct. 27, 1934	Week ended— November 1934				December 1934					January 1935				February 1935		
					3	10	17	24	1	8	15	22	29	5	12	19	26	2	9	16
China:																				
Hankow	C			1																
Shanghai	C		1							2	1		1							
Tientsin	C															1				
Chosen. (See table below.)																				
Colombia	D															1				
Czechoslovakia. (See table below.)																				
Egypt:																				
Alexandria	C	1		1							1				1				1	2
Aswan	C							2	2	1										
Beheira	C	31	1						3		2	4	8	8	14			44	23	
Beni-Suef	C																		3	
Cairo	C							1					1		1					3
Dakahliya	C	7						1							4		6	3	15	
Damietta	D			1							1									
Faiyum	C			1																
Gharbiya	C	22	3	1				6		1		2	3		4		29	38	41	
Giza	C	1													1					
Minufiya	C	5					4	11	4	2	3	11	1	1	2			4	7	
Minya	C	1																		
Port Said	C					1		1				1	1					1		
Qena	C	6		3				1		2	2		2							
Sharkiya	C	3	1							1					1		6	4	7	
Provinces	C	98	35	10	2		5	22	9	7	9	18	16	9	27	39	68	87	95	
Estonia	C	1																		
Greece (see also table below); Salonika	C	6	2	3	1	1	1	1	1	1	1	1	1							
Guatemala. (See table below.)																				
Hungary	C		1						6		1		1			1				1
Iraq:																				
Baghdad	C	3	1	1						1										
Mosul liwa	C	3	3																	
Irish Free State: Waterford County—Lismore	C		1	1																
Italy: Leghorn	C	2	4	1																
Japan:																				
Aomori Prefecture	C	3	1																	
Kobe	C			1																

Nagasaki	D		1																	
Latvia. (See table below.)																				
Lithuania	C	7	2	3		1			1	8	4		3	3	7		9	7	14	6
Mexico:																				
Guadalajara	D		1																	
Mexico, D. F	C	34	26	14					3	18	7	8								
Saltillo	D		2	1																
San Luis Potosi	D			2																
Torreon	C	1		5			1					1	1							1
Morocco	C	43	1		1				7	2	6	1	1		3	3	1		4	6
Palestine	C	1	3	4										2						
Haifa	C	1	1	4			[1] 2	[1] 2		2		1	1							1
Jaffa	C										1			2						
Persia	C	49	47	19	10	5		3	5	10	25	19	9	22		21	16	12	8	
Teheran	C	7	10	1													1			
Peru. (See table below.)																				
Poland	C	77	53	48	14	12	16	19	27	12	38	33	14	34	36	60	69	69	82	57
	D	6	1	5	2	1	3	3	4	3	1	1	1	3	1	6	7	4	3	8
Portugal (see also table below):																				
Oporto	C		1							2										
Tarouca (near)	C														26					
Rumania. (See table below.)																				
Spain	C		1																	
Straits Settlements: Singapore	C													1						
Syria: Beirut	C	1																		
Trans-Jordan	C	4																		2
Tunisia:																				
Tunis	C	1		1	1				3				1							
Provinces	C	14	18	22	18	1	14	2	10	1	8	21	16	9	2	18	20	10	14	25
Turkey. (See table below.)																				
Union of South Africa. (See table below.)																				
Union of Soviet Socialist Republics. (See table below.)																				
Yugoslavia. (See table below.)																				

Place		August 1934	September 1934	October 1934	November 1934	December 1934	January 1935
Bolivia	C	91	33	46	40	103	
Chosen	C	23	7	22	41	29	
Czechoslovakia	C					7	
Greece	C	10	7	6	5	15	
Guatemala	C	36	31	18	18	21	31
Latvia	C			3		8	2
Peru	C	24	63	86	52	17	
Portugal	C	4	7	10	8	27	
Rumania	C	24	16	48	85	127	178
Turkey	C	22	10	16	20	32	22
Union of South Africa:							
Cape Province	C	272	437	407	223	163	
Natal	C	15	6	29	4	8	
Orange Free State	C	510	492	403	309	296	
Transvaal	C	12	105	32	39	29	
Union of Soviet Socialist Republics	C	1,297					
Yugoslavia	C	27	12	31	3	17	55

[1] Imported.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

YELLOW FEVER

[C indicates cases; D, deaths; P, present]

Place		July 29–Aug. 25, 1934	Aug. 26–Sept. 29, 1934	Sept. 30–Oct. 27, 1934	Week ended— November 1934				December 1934					January 1935				February 1935		
					3	10	17	24	1	8	15	22	29	5	12	19	26	2	9	16
Brazil:																				
Ceara State: Iguatu	D	1																		
Mato Grosso State: Coronel Ponce.[1]																				
Colombia: Intendencia of Meta—Restrepo	D							3						1			3		2	
French Equatorial Africa: Middle Congo—Pointenoire.[2]																				
French West Africa—Guinea—Kindia	C		1																	
Gambia:																				
Bathurst	C						1					2		1						
St. Mary's Island	C						[3] 2													
Gold Coast:																				
Aperadi	C														2	1				
	D														1					
Kokobee	C							1												
Oda	C														1					
Wenchi	C						1													
Ivory Coast:																				
Abidjan	C		1																	
Agboville	C		1																	
Banguoanou	C																	1		
Bingerville	C	1																		
Bobo-Diolasso [4]	D			(4) 1																
Dibro	C									3										
	D									1										
Diekekro	C										1									
Dimbokro	C															1				
Gagnoa.[5]																				
Ouagadougou.[4]																				
Tirailleur	C			1																
Toumodi	C									15			1							
	D									10										
Zuenoula	C									1										

Nigeria:																				
Kano	C										2			1						
Quellam Maduri	C																[3] 1			
Niger Territory:																				
Maradi	C		1																	
Zinder	C	5		1											1					
	D	4		1																
Sierre Leone: Hill Station (near Freetown)	C														[3] 1					

[1] During the month of October 1934, 1 case of yellow fever was reported at Coronel Ponce, Mato Grosso State, Brazil.
[2] During the week ended Mar. 16, 1935, 2 cases of yellow fever were reported at Pointenoire, Middle Congo, French Equatorial Africa.
[3] Suspected.
[4] During the week ended Feb. 23, 1935, 1 case of yellow fever was reported at Bobo-Diolasso, Ivory Coast, and 1 case of yellow fever at Ouagadougou, Ivory Coast.
[5] During the week ended Mar. 2, 1935, 1 case of yellow fever was reported at Gagnoa, Ivory Coast.